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Litter Decomposition in Wisconsin Forests—

Mass Loss, Organic-Chemical Constituents and Nitrogen

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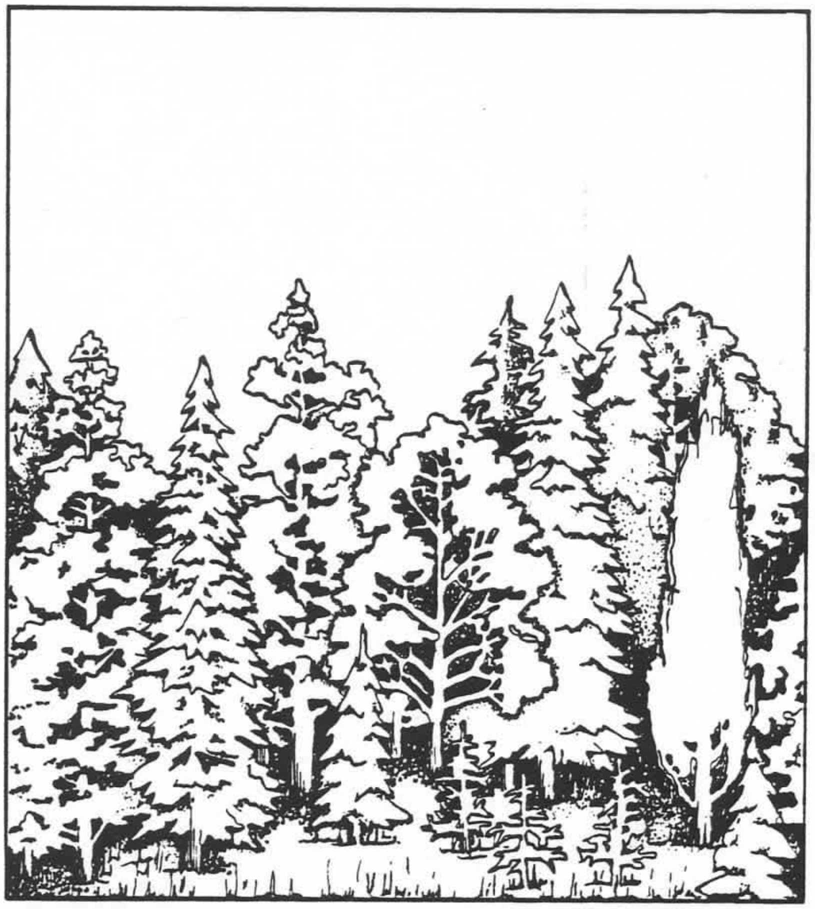

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Abstract

Mass losses and changes in polar and non-polar extractives, acid-soluble (72% H_2SO_4) and acid-insoluble residues, and nitrogen were studied for two years using twelve litter types in five different forest types in south-central Wisconsin. Litter types used were: sugar maple (*Acer saccharum* Marsh.), bigtooth aspen (*Populus grandidentata* Michx.), white oak (*Quercus alba* L.) and northern red oak (*Q. borealis* Michx.) leaves; white pine (*Pinus strobus* L.) and hemlock (*Tsuga canadensis* (L.) Carr.) needles; hemlock and red maple (*Acer rubrum* L.) outer bark; white pine and sugar maple fine roots; and red maple and white pine wood chips. The five forest types, all located on Blackhawk Island near Wisconsin Dells, were classified according to dominant tree species, forest floor and soil type: sugar maple - mull Alfisol; aspen - mull plowed Alfisol; white oak - mor Spodosol; white pine - mor Entisol; and hemlock - mor Histosol. The study used fine (0.1 mm) and coarse (2.0 mm) mesh litter bags incubated on the forest floor and fine mesh bags incubated in the top 5 cm of the soil profile.

Decomposition patterns of litters were affected by their chemical composition. Litters with large initial concentrations of extractives disappeared more rapidly than litters with lower initial concentrations. Litters with very low initial concentrations of extractives, such as wood chips, disappeared at nearly the same rate as their acid-soluble component. Patterns of nitrogen accumulation and release also differed among litter types but all litters accumulated nitrogen during some part of their decomposition. The data presented in this report should be helpful in developing models which predict organic matter and nitrogen dynamics in stands of various species composition, in providing data for comparative studies of ecosystem and regional variability in decomposition processes and nutrient cycling and in furthering our understanding of the role of litter chemical composition in determining the rate and pattern of decomposition.

Introduction

Organic matter decomposition is an essential process of an ecosystem for the recycling of nutrients and carbon and for the maintenance of soil organic matter and fertility. Accordingly, numerous studies have been conducted on forest litter decomposition. Early laboratory studies demonstrated the importance of litter organic-chemical quality, i.e., the concentrations of sugars and other soluble substances, celluloses, lignin and lignin-like compounds (eg. Tenney and Waksman 1929, 1930) and nitrogen content (Richards and Norman 1931). Field studies have yielded similar observations and have emphasized the importance of lignin and nitrogen in affecting decomposition rates (Fogel and Cromack 1977, Melillo et al. 1982). Meentemeyer (1978) proposed that regional variation in decomposition rates could be predicted by actual evapotranspiration, but relatively few studies were available to test his hypothesis.

In the Upper Great Lakes region only one other study has been published which followed decomposition and changes in chemical composition of forest litter (McBrayer and Cromack 1980). This study describes mass losses and changes in soluble and insoluble constituents, including soluble carbohydrates and phenolics, acid-soluble and acid-insoluble substances and nitrogen, during two years of decomposition of 12 litters including bark, wood, fine roots and foliage. The data presented here add significantly to our knowledge of decomposition processes in this region and should be useful to workers comparing decomposition in different regions and of different litter materials.

Study site

The study was conducted on Blackhawk Island in the Wisconsin River, south central Wisconsin, USA (43 38' N, 39 47' W) at an altitude of 260-280 m. Thirty-year mean annual precipitation was 799 mm based on records at Wisconsin Dells weather station located on the Wisconsin River 2 km south of the site. Average Actual Evapotranspiration (AET) calculated for the same period according to the methods of Thornthwaite and Mather (1955, 1957) was 605 mm. AET during the study was calculated as 606 mm and 584 mm for the 12 month periods beginning 1 November, 1980 and 1981, respectively. Soil temperatures were at or near $0^{o}C$ from mid-December until mid-March in both study years.

Five forest communities with distinct vegetation and soils were selected on the 70 ha island: 1) sugar maple (Acer saccharum Marsh.) - Alfisol, 2) aspen (Populus grandidentata Michx.) - plowed Alfisol, 3) white oak (Quercus alba L.) - Spodosol, 4) white pine (Pinus strobus L.) - Entisol and 5) hemlock (Tsuga canadensis (L.) Carr.) - Histosol. With the exception of the aspen stand, which had succeeded on a plowed field, the sites were mature edaphic climax forests with no evidence of recent disturbance. The soils, vegetation and geology of Blackhawk Island and of these sites in particular have been described by Pastor et al. (1982). Precipitation and temperature patterns were similar because the sites were close together, the most distant being 1.2 km apart. Throughfall volumes were not significantly different among stands during the period 20 November, 1980 - 14 June, 1982 (McClaugherty, unpublished). Permanently marked grids, 400 m^2, were established at all sites except the hemlock site, which was surrounded by cliffs and was restricted to 120 m^2 and the sugar maple site, which was 900 m^2 to accommodate the larger number of litter bags placed there.

Materials

Twelve litter materials, all indigenous to the island, were selected for the study. Materials were chosen to represent a wide range of common Wisconsin species. Leaf litter was collected from a number of 1 x 30 m screens spread on the forest floors of each stand during October, 1980. Litter was collected within three days of falling and there was no precipitation during the collection period. Each foliage litter type was collected only in the stand where it was the dominant species except for red oak foliage, which was collected in the white oak stand. Bark and wood were collected from disease-free trees which were felled within 5 km of the island. Bark was hand-peeled and broken into chips of about 1 x 3 cm. Peeled logs, about 20-30 cm in diameter, were chipped with a pulpwood chipper at the Forest Products Laboratory, Madison, Wisconsin, into chips roughly 1 x 2 x 0.25 cm. Fine roots, less than 3.0 mm in diameter, were collected from the forest floor and A horizons. Sugar maple roots were collected adjacent to the sugar maple site and white pine roots were collected in a nearby white pine plantation.

Collected materials were spread in thin layers and air-dried at 20-25 C to constant mass. Moisture content after air-drying ranged from 7.4 to 11.3 % but the range of variation within a litter type was less than 0.5%. Prior to air-drying, fine roots were gently rinsed in tap water to remove adhering soil. Small amounts of each material were weighed, enclosed in litter bags (described below) and placed in the field on 3 November, 1980. Air-dry weights of samples placed in litter bags were 4 g for all foliage litters except hemlock, 2 g for hemlock needles and roots and 10 g for bark and wood. Subsamples were retained for initial moisture and chemical analysis.

Methods

Litter bags were flat 15 x 15 cm pockets. Fine-mesh (0.1 mm) bags were made of polyester; coarse-mesh (2.0 mm) bags of fiberglass window screen. Litter bags were incubated just after leaf fall; bags on the forest floor were covered with windblown litter within a few days. Litter bags in the mineral soil were placed horizontally at a depth of approximately 5 cm. Bags were located randomly using random number tables within each stand except when the randomly located point corresponded with a tree stem. Bags were attached to nylon cords to facilitate location and recovery. Samples of all twelve litter types were incubated in the sugar maple stand. Red maple wood and sugar maple leaves were also incubated in the other four stands. In addition, samples of the dominant foliage litter of each stand were incubated in the stand from which they were collected. Red oak leaves, white pine wood, barks and fine roots were incubated only in the sugar maple stand. The experimental design is illustrated in Figure 1. Incubations were divided into three treatments: fine-mesh bags on the forest floor, fine-mesh bags in the top 5 cm of mineral soil and coarse-mesh bags on the forest floor. All three treatments were not applied to all materials or sites. Hemlock needles and fine roots could not be retained by coarse-mesh, so only fine-mesh bags were used for those three litter types. Sugar maple leaves were only incubated in fine-mesh bags on the forest floors of stands other than the sugar maple (see Figure 1). Four litter bags for each stand-treatment-litter type combination were collected after predetermined incubation periods. Initial materials and incubated samples were analyzed according to the protocol shown in Figure 2. Materials were dried to a constant weight at 60°C, usually for about 48 hours, removed from litter bags, weighed and ground to pass through a 1 mm mesh screen. Subsamples of each sample were analyzed for ash (450°C for 8 hrs), moisture (105°C for 48 hrs) and total nitrogen (Miller and Miller 1948, Technicon Industrial Systems 1977). The remainder of the samples were composited by stand, treatment and litter type. Pooled samples were analyzed for non-polar extractives using dichloromethane as the extractant (TAPPI 1976) and polar extractives using hot (100°C) water as the extractant (TAPPI 1975). Hot water extractives were analyzed for soluble carbohydrates and soluble phenolics. Soluble carbohydrates were determined using a phenol-sulfuric acid colorimetric reaction with glucose as the standard (Dubois et al. 1956). Soluble phenolics were determined using the Folin-Denis colorimetric procedure with tannic acid as the standard (Allen et al. 1974). The extractive-free residue was separated into acid-soluble and acid-insoluble fractions using a two-stage digestion in sulfuric acid (Effland 1977). These two fractions approximated holocellulose and lignin, respectively, at least in the initial litter. Total nitrogen was determined on the extractive-free and the acid-insoluble fractions, using the previously cited method. Acid-soluble nitrogen was estimated by difference. All values are presented in terms of ash-free dry matter.

Results and Discussion

Mass losses and changes in chemical composition for each stand-treatment-litter type combination are presented in Tables 1-60. Chemical constituents of litter during decay are presented in relative terms, as concentrations in the residue; and absolute terms, as mg of substrate per g initial litter mass. Relative amounts indicate the composition of the substrate as it would be encountered by decomposer organisms. Absolute amounts indicate whether a substance has been accumulated by or released from a substrate. The contrast between the two measures is demonstrated by nitrogen which may increase in concentration while decreasing in absolute amount (cf. Table 19 and Figure 5). Detailed discussions of the results are beyond the scope of this report and will be published elsewhere. General patterns of decomposition can be seen from closer examination of two litter materials: sugar maple leaves and red maple wood. Mass losses from sugar maple leaves incubated on the forest floor of the sugar maple stand were initially dominated by losses of extractives (Figure 3).

Absolute amounts of acid-insoluble substances increased slightly during the same period. Absolute increases in acid-insoluble substances may have been due to the binding of non-lignin compounds by modified lignin compounds, microbial synthesis of lignin-like substances, or microbially catalyzed condensations of phenolic substances (_cf_ Stevenson 1982). After the first summer, extractive losses became much smaller and the overall mass loss reflected losses of acid soluble substances.

Similar patterns were observed in other foliage litters in other stands and treatments (Tables 19-50). Figure 4 shows changes in mass and chemical composition of red maple wood incubated under the same conditions as the sugar maple leaves described above. Red maple wood had a lower initial extractive concentration and thus extractive losses were relatively unimportant in overall mass loss. In fact there was a substantial increase in extractive concentration during decomposition of red maple wood (Tables 1-15). This increase in absolute amount of soluble substances was probably due to the breakdown of holocellulose or other insoluble substances. Other non-foliage litters exhibited similar patterns, but red maple wood was a somewhat extreme case. The contrasting mass loss patterns of sugar maple leaves and red maple wood could be explained largely by their different initial extractive contents. The rapid initial mass loss from sugar maple leaves was due to the loss of soluble substances because extractive-free substances disappeared during the first few months of incubation. Acid insoluble substances increased, at least initially, in all litter materials studied. It is interesting to note that the pattern of decomposition portrayed by Figure 4 does not fit the commonly assumed negative exponential decay model (eg. Jenny et al. 1949, Olson 1963). The slow initial decay rate of red maple wood and other bark and wood litters may have been related to the time required for fungal decomposers to invade the substrate. Total nitrogen content of sugar maple leaves (Figure 5) declined slightly during the first few weeks, presumably due to leaching. The initial decline was followed by a period of accumulation and subsequently a period of release (cf. Berg and Staaf, 1981).

During the period of accumulation, absolute nitrogen contents increased above initial levels in all litters. Most litters began releasing nitrogen prior to the end of the two-year incubation period. Also noteworthy is the early large conversion of extractable nitrogen to acid soluble nitrogen. The~~se~~is phenomenon we~~re~~as observed to some extent in all litter types. Nitrogen in red maple wood was almost entirely in the acid insoluble form during the first several months of incubation (Figure 6). Nitrogen continued to accumulate in red maple wood litter throughout the two-year period, but the accumulation during the second year was almost entirely due to increases in extractable nitrogen. Extractable nitrogen began appearing at the same time that the rate of total dry matter and acid soluble subtances began de~~in~~creasing (cf. Figure 4). Red maple wood in some other treatments and stands had begun releasing nitrogen near the end of the two-year incubation period as had bark and white pine wood litters. Thus red maple wood was less exemplary of nitrogen changes in non-foliage litters than sugar maple leaves were for foliage litters.

Summary

Data are presented on mass losses and changes in organic-chemical constituents and nitrogen in 12 litter types during two years of decomposition in five Wisconsin forest types. Litters which had the highest initial concentrations of extractable materials, as exemplified by sugar maple leaves, lost mass most rapidly and followed the classical negative exponential decay pattern. In contrast, litters with the lowest initial concentrations of extractable substances lost mass most slowly and did not follow a negative exponential decay pattern. Nitrogen changes occurred in up to three phases: leaching, accumulation and release. Accumulation phases were observed in all litter types. Partitioning of nitrogen among extractable, acid soluble and acid insoluble fractions varied among species and through the course of decomposition. Increasing amounts of extractable nitrogen were associated with the onset of more rapid decomposition of acid soluble substances.

Acknowledgements

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		WOOD		FOLIAGE						BARK		ROOTS	
SITE	TREATMENT	RED MAPLE	WHITE PINE	SUGAR MAPLE	ASPEN	WHITE OAK	WHITE PINE	HEMLOCK	RED OAK	HEMLOCK	RED MAPLE	WHITE PINE	SUGAR MAPLE
SUGAR MAPLE	FS	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	FB	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
	CS	☒	☒	☒	☒	☒	☒		☒	☒	☒		
ASPEN	FS	☒		☒	☒								
	FB	☒			☒								
	CS	☒			☒								
WHITE OAK	FS	☒		☒		☒							
	FB	☒				☒							
	CS	☒				☒							
WHITE PINE	FS	☒		☒			☒						
	FB	☒					☒						
	CS	☒					☒						
HEMLOCK	FS	☒		☒				☒					
	FB	☒						☒					
	CS	☒											

Figure 1. Experimental design for Blackhawk Island decomposition study. Three litter bag treatments were used: fine-mesh (0.1 mm) incubated on the surface of the forest floor (FS), fine-mesh buried in the top 5 cm of soil (FB), and coarse-mesh (2.0 mm) on the surface (CS). The figure indicates the stand-treatment-litter material combinations which were examined in this study.

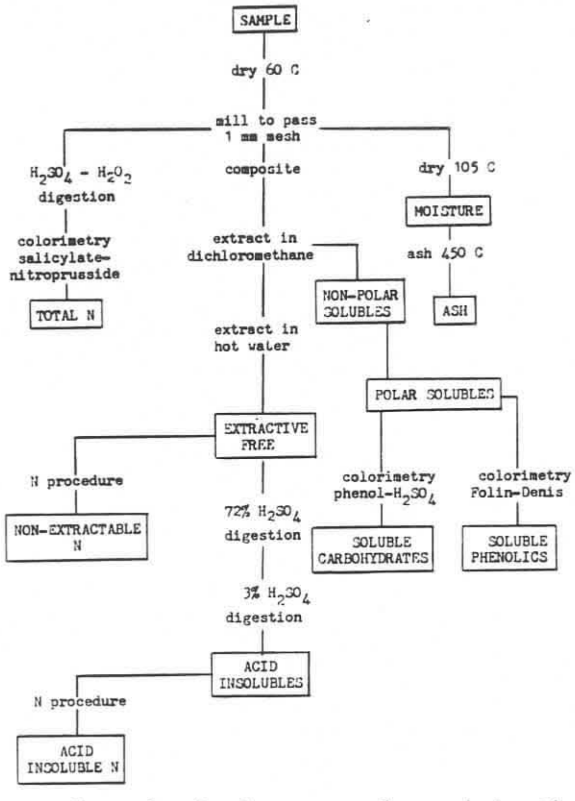

Figure 2. Flow scheme of analytical protocol used in the Blackhawk Island decomposition study. Details and references to the methods are given in the text. Note that the contents of each litter bag were analyzed for moisture, ash and total nitrogen before being pooled. Four replicates of each stand-treatment-litter material combination were composited for subsequent analyses.

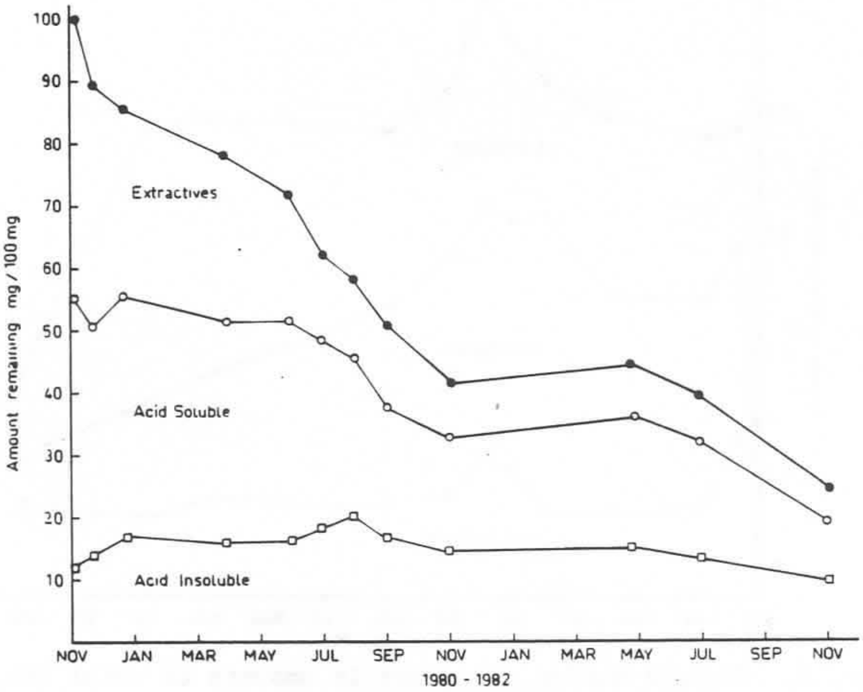

Figure 3. Changes during two years in amounts of dry matter (●), non-extractable substances (○), and acid insoluble substances (□) in sugar maple leaf litter decomposing in fine-mesh litter bags on the forest floor of the sugar maple stand. The distance between the upper two lines represents the amount of extractable substances; that between the lower lines represents the amount of acid soluble substances. Values are presented as mg remaining per 100 mg of initial dry matter.

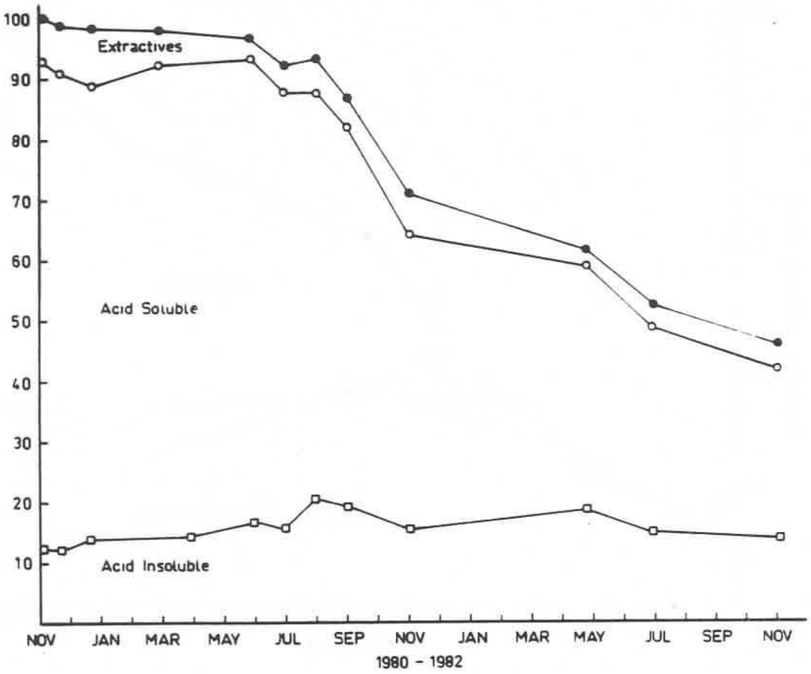

Figure 4. Changes during two years in amounts of dry matter (●), non-extractable substances (○), and acid insoluble substances (□) in red maple wood litter decomposing in fine-mesh litter bags on the forest floor of the sugar maple stand. The distance between the upper two lines represents the amount of extractable substances; that between the lower lines represents the amount of acid soluble substances. Values are presented as mg remaining per 100 mg of initial dry matter.

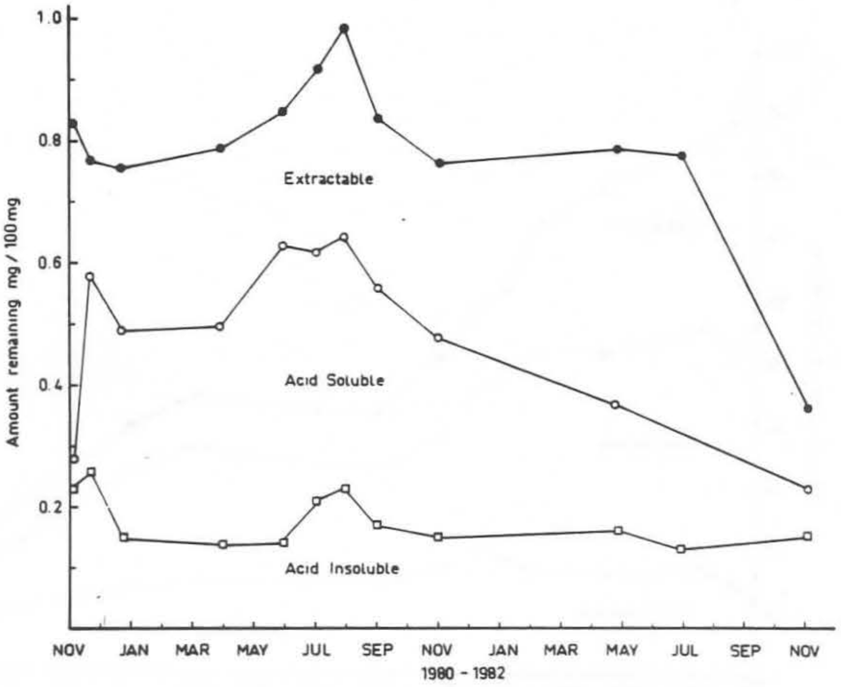

Figure 5. Changes during two years in amounts of total (●), non-extractable (○), and acid insoluble (□) nitrogen in sugar maple leaf litter decomposing in fine-mesh litter bags on the forest floor of the sugar maple stand. The distance between the upper two lines represents the amount of extractable nitrogen; that between the lower lines represents the amount of acid soluble nitrogen. Values are presented as mg remaining per 100 mg of initial dry matter.

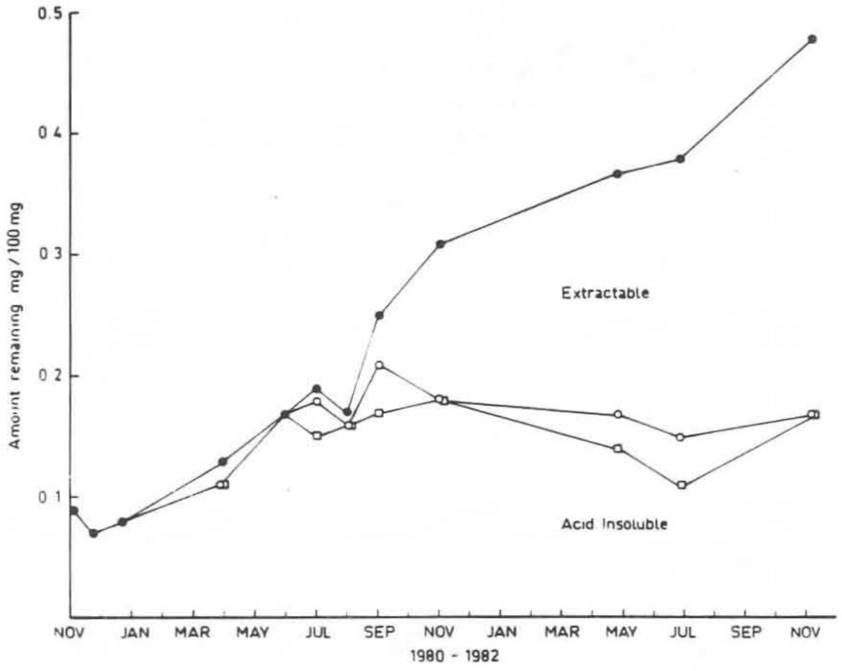

Figure 6. Changes during two years in amounts of total (●), non-extractable (○), and acid insoluble (□) nitrogen in red maple wood litter decomposing in fine-mesh litter bags on the forest floor of the sugar maple stand. The distance between the upper two lines represents the amount of extractable nitrogen; that between the lower lines represents the amount of acid soluble nitrogen. Values are presented as mg remaining per 100 mg of initial dry matter.

TABLES

The following tables present mass losses and changes in organic-chemical constituents and nitrogen during two years of incubation. Each table presents data for a single treatment-stand-litter type combination. Relative values (REL) are expressed as percent of the remaining dry matter; absolute values (ABS) as mg per g initial litter dry matter. Soluble phenolics (PHENOLS) and soluble carbohydrates (CARB) were measured in the hot water extractable substances. Values are on an ash-free, oven-dry basis.

LIST OF TABLES

TABLE	MATERIAL	STAND	BAG MESH	SOIL LAYER
1	Red maple wood	sugar maple	fine	forest floor
2	Red maple wood	sugar maple	fine	mineral soil
3	Red maple wood	sugar maple	coarse	forest floor
4	Red maple wood	aspen	fine	forest floor
5	Red maple wood	aspen	fine	mineral soil
6	Red maple wood	aspen	coarse	forest floor
7	Red maple wood	white oak	fine	forest floor
8	Red maple wood	white oak	fine	mineral soil
9	Red maple wood	white oak	coarse	forest floor
10	Red maple wood	white pine	fine	forest floor
11	Red maple wood	white pine	fine	mineral soil
12	Red maple wood	white pine	coarse	forest floor
13	Red maple wood	hemlock	fine	forest floor
14	Red maple wood	hemlock	fine	mineral soil
15	Red maple wood	hemlock	coarse	forest floor
16	White pine wood	sugar maple	fine	forest floor
17	White pine wood	sugar maple	fine	mineral soil
18	White pine wood	sugar maple	coarse	forest floor
19	Sugar maple leaves	sugar maple	fine	forest floor
20	Sugar maple leaves	sugar maple	fine	mineral soil
21	Sugar maple leaves	sugar maple	coarse	forest floor
22	Sugar maple leaves	aspen	fine	forest floor
23	Sugar maple leaves	white oak	fine	forest floor
24	Sugar maple leaves	white pine	fine	forest floor
25	Sugar maple leaves	hemlock	fine	forest floor
26	Aspen leaves	sugar maple	fine	forest floor
27	Aspen leaves	sugar maple	fine	mineral soil
28	Aspen leaves	sugar maple	coarse	forest floor
29	Aspen leaves	aspen	fine	forest floor
30	Aspen leaves	aspen	fine	mineral soil
31	Aspen leaves	aspen	coarse	forest floor
32	White oak leaves	sugar maple	fine	forest floor
33	White oak leaves	sugar maple	fine	mineral soil
34	White oak leaves	sugar maple	coarse	forest floor
35	White oak leaves	white oak	fine	forest floor

36	White oak leaves	white oak	fine	mineral soil
37	White oak leaves	white oak	coarse	forest floor
38	White pine needles	sugar maple	fine	forest floor
39	White pine needles	sugar maple	fine	mineral soil
40	White pine needles	sugar maple	coarse	forest floor
41	White pine needles	white pine	fine	forest floor
42	White pine needles	white pine	fine	mineral soil
43	White pine needles	white pine	coarse	forest floor
44	Hemlock needles	sugar maple	fine	forest floor
45	Hemlock needles	sugar maple	fine	mineral soil
46	Hemlock needles	hemlock	fine	forest floor
47	Hemlock needles	hemlock	fine	mineral soil
48	Red oak leaves	sugar maple	fine	forest floor
49	Red oak leaves	sugar maple	fine	mineral soil
50	Red oak leaves	sugar maple	coarse	forest floor
51	Hemlock bark	sugar maple	fine	forest floor
52	Hemlock bark	sugar maple	fine	mineral soil
53	Hemlock bark	sugar maple	coarse	forest floor
54	Red maple bark	sugar maple	fine	forest floor
55	Red maple bark	sugar maple	fine	mineral soil
56	Red maple bark	sugar maple	coarse	forest floor
57	White pine roots	sugar maple	fine	forest floor
58	White pine roots	sugar maple	fine	mineral soil
59	Sugar maple roots	sugar maple	fine	forest floor
60	Sugar maple roots	sugar maple	fine	mineral soil

Table 1. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	99.0 (1.2)	6.0	59.4	2.4	23.8	8.4	83.2
801222	49	98.9 (0.3)	7.9	78.1	2.4	23.7	10.3	102.
810403	151	98.6 (0.7)	4.9	48.3	1.1	10.8	6.0	59.2
810605	214	97.3 (1.1)	1.9	18.5	2.0	19.5	3.9	37.9
810703	242	92.5 (4.6)	2.1	19.4	2.7	25.0	4.8	44.4
810731	270	93.5 (2.0)	3.0	28.1	2.7	25.2	5.7	53.3
810905	306	87.2 (2.3)	3.1	27.0	2.5	21.8	5.6	48.8
811102	364	70.7 (15.0)	4.4	31.1	4.7	33.2	9.1	64.3
820423	536	62.1 (8.3)	1.4	8.7	3.2	19.9	4.6	28.6
820682	602	52.7 (6.1)	1.8	9.5	5.9	31.0	7.7	40.6
821105	732	46.4 (12.6)	1.6	7.4	7.2	33.4	8.8	40.8

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.5	5.0	1.2	11.9	79.2	784.	12.4	123.
49	0.3	3.0	1.1	10.9	75.4	745.	14.3	141.
151	0.3	3.0	0.7	6.9	79.8	787.	14.2	140.
214	0.2	1.9	0.8	7.8	78.8	767.	17.3	168.
242	0.5	4.7	1.0	9.3	78.6	727.	16.6	154.
270	0.5	4.7	1.4	13.1	72.8	681.	21.5	201.
306	0.3	2.6	1.3	11.3	72.5	632.	21.9	191.
364	0.3	2.1	1.8	12.7	68.8	486.	22.1	156.
536	0.3	1.9	1.1	6.8	65.4	406.	30.0	186.
602	0.7	3.7	0.9	4.7	64.1	338.	28.2	149.
732	0.6	2.8	1.2	5.6	61.1	284.	30.1	140.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.07 (0.006)	0.7	0.07	0.7	0.07	0.7
49	0.08 (0.008)	0.8	0.08	0.8	0.08	0.8
151	0.13 (0.02)	1.3	0.11	1.1	0.11	1.1
214	0.17 (0.02)	1.7	0.17	1.7	0.17	1.7
242	0.20 (0.05)	1.9	0.19	1.8	0.16	1.5
270	0.18 (0.03)	1.7	0.17	1.6	0.17	1.6
306	0.29 (0.03)	2.5	0.24	2.1	0.19	1.7
364	0.44 (0.29)	3.1	0.26	1.8	0.26	1.8
536	0.60 (0.17)	3.7	0.28	1.7	0.22	1.4
602	0.72 (0.13)	3.8	0.29	1.5	0.20	1.1
732	1.03 (0.15)	4.8	0.37	1.7	0.37	1.7

Table 2. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	99.4 (0.2)	5.3	52.7	2.1	20.9	7.4	73.6
810403	151	97.3 (0.6)	4.9	47.7	7.1	69.1	12.0	117.
810703	242	87.1 (5.2)	5.1	44.4	2.6	22.6	7.7	67.1
811102	364	56.6 (16.3)	2.3	13.0	4.7	26.6	7.0	39.6
820423	536	55.8 (13.3)	2.2	12.3	3.0	16.7	5.2	29.0
821105	732	52.4 (6.5)	1.9	10.0	5.0	26.2	6.9	36.2

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.5	5.0	1.5	14.9	--	--	--	--
151	0.5	4.9	1.0	9.7	--	--	--	--
242	0.3	2.6	1.2	10.5	--	--	--	--
364	0.4	2.0	2.6	14.7	70.4	398.	22.6	128.
536	0.2	1.1	1.3	7.3	--	--	--	--
732	0.5	2.6	1.6	8.4	62.3	323.	30.8	160.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.09 (0.008)	0.9	--	--	--	--
151	0.14 (0.03)	1.4	--	--	--	--
242	0.21 (0.03)	1.8	0.21	1.8	--	--
364	0.54 (0.18)	3.1	0.49	2.8	--	--
536	0.63 (0.11)	3.5	--	--	--	--
732	0.77 (0.11)	4.0	0.56	2.9	0.24	1.26

Table 3. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in coarse-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	99.8 (0.2)	5.3	52.9	1.9	19.0	7.2	71.9
810403	151	99.1 (0.7)	5.3	52.5	3.8	37.7	9.1	90.2
810703	242	97.6 (0.5)	4.6	44.9	4.5	43.9	9.1	88.8
811102	364	79.7 (6.6)	3.5	27.9	5.1	40.6	8.6	68.5
820423	536	74.3 (10.4)	1.1	8.2	2.7	20.1	3.8	28.2
821105	732	63.4 (9.2)	1.4	8.9	5.6	35.5	7.0	44.4

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.4	4.0	1.1	11.0	--	--	--	--
151	0.6	5.9	1.2	11.9	--	--	--	--
242	0.4	3.9	1.0	9.8	--	--	--	--
364	0.3	2.4	1.2	9.6	73.0	582.	18.4	147.
536	0.4	3.0	1.0	7.4	--	--	--	--
732	0.5	3.2	0.5	3.2	66.5	422.	26.5	168.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.08 (0.006)	0.8	--	--	--	--
151	0.11 (0.02)	1.1	--	--	--	--
242	0.17 (0.02)	1.7	0.17	1.7	--	--
364	0.53 (0.08)	4.2	0.46	3.7	--	--
536	0.67 (0.19)	5.0	--	--	--	--
732	0.89 (0.12)	5.6	0.52	3.3	0.28	1.8

Table 4. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in fine-mesh litter bags on the forest floor of the aspen stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	99.3 (0.3)	5.4	53.6	2.3	22.8	7.7	76.5
810403	151	98.3 (0.3)	5.6	55.0	1.7	16.7	7.3	71.8
810703	242	90.4 (5.8)	4.1	37.1	2.3	20.8	6.4	57.9
811102	364	73.2 (14.4)	4.2	30.7	3.6	26.4	7.8	57.1
820423	536	70.6 (14.7)	1.1	7.8	4.6	32.5	5.7	40.2
821105	732	55.3 (20.2)	2.5	13.8	7.1	39.3	9.6	53.1

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.4	4.0	1.0	9.9	--	--	--	--
151	0.2	2.0	0.5	4.9	--	--	--	--
242	0.5	4.5	1.6	4.9	--	--	--	--
364	0.4	2.9	1.9	13.9	73.6	539.	18.6	136.
536	0.3	2.1	1.5	10.6	--	--	--	--
732	0.7	3.9	3.0	16.6	66.7	369.	23.7	131.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.07 (0.005)	0.7	--	--	--	--
151	0.12 (0.02)	1.2	--	--	--	--
242	0.21 (0.02)	1.9	0.21	1.9	--	--
364	0.34 (0.14)	2.5	0.34	2.5	--	--
536	0.36 (0.007)	2.5	--	--	--	--
732	0.75 (0.03)	4.1	0.49	2.7	0.22	1.2

Table 5. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in fine-mesh litter bags in the mineral soil of the aspen stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	99.1 (0.3)	4.8	47.6	2.7	26.8	7.5	74.3
810403	151	97.3 (1.3)	5.1	49.6	3.1	30.2	8.2	79.8
810703	242	88.6 (11.9)	3.3	29.2	3.0	26.6	6.2	54.9
811102	364	46.1 (5.2)	5.8	26.7	5.2	24.0	11.0	50.7
820423	536	52.8 (5.4)	0.8	4.2	3.2	16.9	4.0	21.1
821105	732	36.5 (18.7)	2.5	9.1	5.0	18.3	7.5	27.4

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.7	6.9	1.9	18.8	--	--	--	--
151	0.2	1.9	0.9	8.8	--	--	--	--
242	0.4	3.5	1.7	15.1	--	--	--	--
364	0.3	1.4	1.5	6.9	--	--	--	--
536	0.3	1.6	1.3	6.9	--	--	--	--
732	0.6	2.2	3.7	13.5	59.6	218.	32.9	120.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.08 (0.01)	0.8	--	--	--	--
151	0.13 (0.03)	1.3	--	--	--	--
242	0.20 (0.03)	1.8	0.20	1.8	--	--
364	0.63 (0.12)	2.9	0.52	2.4	--	--
536	0.55 (0.08)	2.9	--	--	--	--
732	0.70 (0.03)	2.6	0.53	1.9	0.27	1.0

Table 6. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in coarse-mesh litter bags on the forest floor of the aspen stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	99.5 (0.4)	5.4	53.7	2.4	23.9	7.8	77.6
810403	151	98.9 (0.2)	5.4	53.4	4.0	39.6	9.4	93.0
810703	242	97.3 (0.5)	4.7	45.7	4.8	46.7	9.6	93.4
811102	364	73.6 (9.5)	4.4	32.4	4.0	29.4	8.4	61.8
820423	536	66.4 (17.4)	1.0	6.6	8.2	54.4	9.2	61.1
821105	732	42.1 (22.0)	2.4	10.1	7.3	30.7	9.7	40.8

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.4	4.0	0.9	9.0	--	--	--	--
151	0.6	5.9	1.1	10.9	--	--	--	--
242	1.2	11.7	2.2	21.4	--	--	--	--
364	0.6	4.4	2.2	19.9	70.1	516.	21.5	158.
536	0.6	4.0	3.3	21.9	--	--	--	--
732	0.7	2.9	2.0	8.4	63.5	267.	26.8	113.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.08 (0.006)	0.8	--	--	--	--
151	0.11 (0.02)	1.1	--	--	--	--
242	0.16 (0.02)	1.2	0.16	1.2	--	--
364	0.42 (0.11)	3.1	0.39	2.9	--	--
536	0.60 (0.22)	4.0	--	--	--	--
732	0.75 (0.03)	3.2	0.51	3.2	0.29	1.2

Table 7. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in fine-mesh litter bags on the forest floor of the white oak stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	99.4 (0.4)	5.4	53.7	2.3	22.9	7.7	76.5
810403	151	98.1 (0.6)	5.6	54.9	1.7	16.7	7.3	71.6
810703	242	96.5 (1.4)	3.0	29.0	1.7	16.4	4.7	45.4
811102	364	84.9 (1.5)	3.5	29.7	3.5	29.7	7.0	59.4
820423	536	82.0 (5.6)	0.2	1.6	3.0	24.6	3.2	26.2
821105	732	44.8 (14.2)	1.0	4.5	4.7	21.1	5.7	25.5

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.4	4.0	0.9	8.9	--	--	--	--
151	0.2	2.0	0.7	6.9	--	--	--	--
242	0.2	1.9	1.1	10.6	--	--	--	--
364	0.4	3.4	1.4	11.9	73.8	627.	19.2	163.
536	0.3	2.5	1.0	8.2	--	--	--	--
732	0.6	2.7	1.2	5.4	69.4	311.	24.9	112.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.08 (0.01)	0.8	--	--	--	--
151	0.13 (0.02)	1.3	--	--	--	--
242	0.17 (0.01)	1.6	0.17	1.6	--	--
364	0.22 (0.01)	1.9	0.22	1.9	--	--
536	0.31 (0.09)	2.5	--	--	--	--
732	0.50 (0.03)	2.2	0.33	1.5	0.23	1.0

Table 8. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in fine-mesh litter bags in the mineral soil of the white oak stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	98.9 (0.2)	5.0	49.5	2.3	22.7	7.3	72.2
810403	151	97.5 (0.8)	5.2	50.7	3.4	33.2	8.6	83.9
810703	242	93.5 (2.2)	2.7	25.2	2.0	18.7	4.7	43.9
811102	364	86.0 (4.6)	4.1	35.3	4.0	34.4	8.1	69.7
820423	536	81.5 (7.5)	0.8	6.5	3.0	24.5	3.8	31.0
821105	732	62.3 (5.2)	1.0	6.2	6.8	42.4	7.8	48.6

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.3	3.0	0.8	7.9	--	--	--	--
151	0.4	3.9	1.0	6.2	--	--	--	--
242	0.4	3.7	1.3	12.2	--	--	--	--
364	0.4	3.4	1.7	14.7	--	--	--	--
536	0.3	2.4	1.2	9.8	--	--	--	--
732	0.6	3.7	1.4	8.7	68.1	424.	24.1	150.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.08 (0.03)	0.8	--	--	--	--
151	0.12 (0.02)	1.2	--	--	--	--
242	0.17 (0.03)	1.6	0.17	1.6	--	--
364	0.30 (0.10)	2.6	0.23	2.0	--	--
536	0.31 (0.06)	2.5	--	--	--	--
732	0.58 (0.05)	3.6	0.37	2.3	0.18	1.1

Table 9. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in coarse-mesh litter bags on the forest floor of the white oak stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)		EXTRACTIVES					
				NON-POLAR		POLAR		TOTAL	
				REL	ABS	REL	ABS	REL	ABS
801103	0	100.0	--	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	99.7	(0.4)	5.4	53.8	2.6	25.9	8.0	79.8
810403	151	99.4	(0.2)	5.9	58.6	3.5	34.8	9.4	93.4
810703	242	98.0	(0.9)	3.6	35.3	3.9	38.2	7.5	73.5
811102	364	87.7	(2.2)	4.1	36.0	4.4	38.6	8.5	74.5
820423	536	79.3	(5.8)	0.9	7.1	5.8	46.0	6.7	53.1
821105	732	61.8	(6.8)	1.8	11.1	6.2	38.3	8.0	49.4

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.7	7.0	1.0	10.0	--	--	--	--
151	0.4	4.0	1.0	9.9	--	--	--	--
242	0.2	2.0	2.3	22.5	--	--	--	--
364	0.4	3.5	2.3	23.5	--	--	--	--
536	0.4	3.2	1.8	15.8	--	--	--	--
732	0.8	4.9	1.7	10.5	65.3	404.	26.7	165.

DAYS INCUBATED	NITROGEN						
	TOTAL LITTER			NON-EXTRACTABLE		ACID INSOLUBLE	
	REL		ABS	REL	ABS	REL	ABS
0	0.09	(0.008)	0.9	0.01	0.1	0.08	0.8
21	0.07	(0.01)	0.7	--	--	--	--
151	0.11	(0.005)	1.1	--	--	--	--
242	0.16	(0.01)	1.6	0.15	1.5	--	--
364	0.28	(0.06)	2.5	0.26	2.3	--	--
536	0.59	(0.19)	4.7	--	--	--	--
732	0.55	(0.04)	3.4	0.38	2.3	0.26	1.6

Table 10. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in fine-mesh litter bags on the forest floor of the white pine stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	99.0 (0.8)	4.2	41.6	1.8	17.8	6.0	59.4
810403	151	98.9 (0.4)	5.3	52.4	1.8	17.8	7.1	70.2
810703	242	96.2 (1.5)	2.6	25.0	1.9	18.3	4.5	43.3
811102	364	79.1 (16.2)	4.2	33.2	4.4	34.8	8.6	68.0
820423	536	68.5 (16.9)	3.2	21.9	5.4	37.0	8.6	58.9
821105	732	45.4 (10.0)	1.7	7.7	6.6	30.0	8.3	37.7

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.3	3.0	1.1	10.9	--	--	--	--
151	0.3	3.0	0.7	6.9	--	--	--	--
242	0.3	2.9	1.2	11.5	--	--	--	--
364	0.4	3.2	1.9	15.0	73.0	500.	18.4	126.
536	0.3	2.1	1.7	11.6	--	--	--	--
732	0.6	2.7	2.0	9.1	64.7	294.	27.0	123.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.08 (0.01)	0.8	--	--	--	--
151	0.12 (0.01)	1.2	--	--	--	--
242	0.15 (0.01)	1.4	0.13	1.3	--	--
364	0.33 (0.22)	2.6	0.29	2.3	--	--
536	0.56 (0.22)	3.8	--	--	--	--
732	0.79 (0.09)	3.6	0.56	2.5	0.27	1.2

Table 11. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in fine-mesh litter bags in the mineral soil of the white pine stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	99.2 (0.1)	5.4	53.6	2.1	20.8	7.5	74.4
810403	151	97.6 (0.3)	5.2	50.8	3.2	31.2	8.4	82.0
810703	242	93.8 (1.4)	2.5	23.5	3.5	32.8	6.1	57.2
811102	364	64.9 (11.4)	4.3	27.9	3.7	24.0	8.0	51.9
820423	536	64.5 (14.4)	0.4	2.6	5.2	33.5	5.6	36.1
821105	732	65.8 (7.1)	1.4	9.2	4.2	27.6	5.6	36.8

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.4	4.0	1.0	10.9	--	--	--	--
151	0.5	4.9	0.7	6.8	--	--	--	--
242	0.8	7.5	1.9	17.8	--	--	--	--
364	0.5	3.2	2.3	14.9	71.8	466.	20.2	131.
536	0.5	3.2	1.7	11.0	--	--	--	--
732	0.6	3.9	2.2	14.5	66.4	437.	28.0	184.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.08 (0.01)	0.8	--	--	--	--
151	0.13 (0.005)	1.3	--	--	--	--
242	0.24 (0.08)	2.3	0.23	2.2	--	--
364	0.45 (0.16)	2.9	0.38	2.5	--	--
536	0.50 (0.05)	3.2	--	--	--	--
732	0.67 (0.07)	4.4	0.46	3.0	0.19	1.25

Table 12. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in coarse mesh litter bags on the forest floor of the white pine stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES NON-POLAR		EXTRACTIVES POLAR		EXTRACTIVES TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	98.3 (2.3)	6.5	63.9	2.2	21.6	8.7	85.5
810403	151	99.0 (0.7)	4.6	45.5	4.4	43.6	9.0	89.1
810703	242	97.2 (1.6)	2.8	27.2	2.5	24.3	5.2	50.5
811102	364	88.9 (7.3)	3.2	28.4	4.9	43.6	8.1	72.0
820423	536	80.9 (4.6)	0.4	3.2	8.0	64.7	8.4	68.0
821105	732	60.4 (13.4)	1.2	7.2	9.7	58.6	10.9	65.8

DAYS INCUBATED	SOLUBLE PHENOLS		SOLUBLE CARB		ACID SOLUBLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.5	4.9	0.9	8.8	--	--	--	--
151	0.7	6.9	1.2	11.9	--	--	--	--
242	0.5	4.9	1.3	12.6	--	--	--	--
364	0.4	3.6	1.4	12.4	--	--	--	--
536	0.6	4.9	2.5	20.2	--	--	--	--
732	0.9	5.4	1.7	10.3	64.3	388.	24.8	150.

DAYS INCUBATED	NITROGEN TOTAL LITTER		NITROGEN NON-EXTRACTABLE		NITROGEN ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.07 (0.005)	0.7	--	--	--	--
151	0.13 (0.01)	1.3	--	--	--	--
242	0.16 (0.01)	1.6	0.14	1.4	--	--
364	0.29 (0.07)	1.6	0.29	2.6	--	--
536	0.39 (0.08)	3.2	--	--	--	--
732	0.65 (0.07)	3.9	0.43	2.6	0.18	1.1

Table 13. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in fine-mesh litter bags on the forest floor of the hemlock stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	98.9 (0.3)	5.4	53.4	2.2	21.8	7.6	75.2
810403	151	98.3 (0.4)	4.8	47.2	1.8	17.7	6.6	64.9
810703	242	95.1 (0.9)	3.3	31.4	2.7	25.7	6.0	57.1
811102	364	82.0 (4.0)	4.4	36.1	5.9	48.4	10.3	84.5
820423	536	78.0 (12.4)	0.7	5.5	6.2	48.4	6.9	53.8
821105	732	61.4 (15.2)	0.8	4.9	6.0	36.8	6.8	41.8

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.4	4.0	0.9	8.9	--	--	--	--
151	0.3	2.9	0.8	7.9	--	--	--	--
242	0.4	3.8	1.3	12.4	--	--	--	--
364	0.6	4.9	2.6	21.3	71.6	587.	18.1	148.
536	0.3	2.3	1.9	14.8	--	--	--	--
732	0.7	4.3	2.0	12.3	71.8	441.	21.4	131.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.09 (0.01)	0.9	--	--	--	--
151	0.12 (0.01)	1.2	--	--	--	--
242	0.18 (0.01)	1.7	0.17	1.6	--	--
364	0.26 (0.03)	2.1	0.25	2.1	--	--
536	0.42 (0.24)	3.3	--	--	--	--
732	0.44 (0.06)	2.7	0.27	1.7	0.13	0.8

Table 14. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in fine-mesh litter bags in the mineral soil of the hemlock stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	98.8 (0.1)	5.2	51.4	2.5	24.7	7.7	76.1
810403	151	97.3 (0.8)	5.3	51.6	2.9	28.2	8.2	79.8
810703	242	93.9 (2.5)	3.7	34.7	3.4	31.9	7.1	66.7
811102	364	81.6 (6.3)	4.9	40.0	4.1	33.5	9.0	73.4
820423	536	85.7 (3.6)	0.3	2.6	3.5	30.0	3.8	32.6
821105	732	59.4 (15.7)	1.2	7.1	6.5	38.6	7.7	45.7

DAYS INCUBATED	PHENOLS		SOLUBLE CARB		ACID SOLUBLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.5	4.9	1.6	15.8	--	--	--	--
151	0.5	4.9	0.9	8.8	--	--	--	--
242	0.2	1.9	0.9	8.5	--	--	--	--
364	0.4	3.3	1.7	13.9	--	--	--	--
536	0.3	2.6	1.2	10.3	--	--	--	--
732	0.8	4.8	2.3	13.7	68.8	409.	23.5	140.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.07 (0.005)	0.7	--	--	--	--
151	0.12 (0.02)	1.2	--	--	--	--
242	0.16 (0.03)	1.5	0.15	1.4	--	--
364	0.25 (0.02)	2.0	0.19	1.6	--	--
536	0.30 (0.08)	2.6	--	--	--	--
732	0.44 (0.06)	2.6	0.30	1.8	0.18	1.1

Table 15. Mass loss and organic-chemical changes during decomposition of red maple wood incubated in coarse-mesh litter bags on the forest floor of the hemlock stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	4.8	48.0	2.2	22.0	7.0	70.0
801124	21	99.4 (0.2)	4.9	48.7	3.2	31.8	8.1	80.5
810403	151	99.4 (0.2)	4.8	47.7	3.2	31.8	8.0	79.5
810703	242	97.1 (0.8)	2.5	24.3	2.3	22.3	4.7	45.6
811102	364	88.6 (0.7)	3.5	31.0	3.1	27.5	6.6	58.5
820423	536	83.2 (5.8)	0.4	3.3	5.0	41.6	5.4	44.9
821105	732	69.2 (3.7)	2.2	15.2	6.0	41.5	8.2	56.7

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.5	5.0	1.1	11.0	80.5	805.0	12.5	125.0
21	0.5	5.0	1.2	11.9	--	--	--	--
151	0.2	2.0	1.1	10.9	--	--	--	--
242	0.7	6.8	1.9	18.4	--	--	--	--
364	0.4	3.5	1.6	14.2	--	--	--	--
536	0.3	2.5	1.8	15.0	--	--	--	--
732	0.8	5.5	2.3	15.9	69.1	478.	22.7	157.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.09 (0.008)	0.9	0.01	0.1	0.08	0.8
21	0.08 (0.008)	0.8	--	--	--	--
151	0.10 (0.03)	1.0	--	--	--	--
242	0.17 (0.01)	1.7	0.17	1.7	--	--
364	0.30 (0.04)	2.7	0.22	1.9	--	--
536	0.36 (0.08)	3.0	--	--	--	--
732	0.56 (0.05)	3.9	0.35	2.4	0.18	1.2

Table 16. Mass loss and organic-chemical changes during decomposition of white pine wood incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	8.1	81.0	1.5	15.0	9.6	96.0
801124	21	99.3 (0.2)	6.9	68.5	2.4	23.8	9.3	92.3
801222	49	98.4 (0.2)	7.7	75.8	2.6	25.6	10.3	101.
810403	151	98.3 (0.2)	5.8	57.0	1.6	15.7	7.4	72.7
810605	214	98.7 (0.1)	4.5	44.4	2.2	21.7	6.7	66.1
810703	242	98.3 (0.5)	5.0	49.2	2.3	22.6	7.3	71.8
810731	270	97.5 (0.5)	7.0	68.3	1.9	18.5	8.9	86.8
810905	306	96.5 (2.2)	3.4	32.8	2.3	22.2	5.7	55.0
811102	364	93.5 (2.4)	3.6	33.7	2.3	21.5	5.9	55.2
820423	536	91.4 (0.6)	2.0	18.3	3.1	28.3	5.1	44.6
820682	602	86.4 (0.6)	1.1	9.5	3.4	29.3	4.5	38.9
821105	732	70.5 (7.2)	2.6	18.3	5.7	40.2	8.3	58.5

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.6	6.0	0.4	4.0	68.3	683.0	22.1	221.0
21	0.6	6.0	1.2	11.9	68.0	675.	22.7	225.
49	0.2	2.0	1.1	10.8	66.6	655.	23.1	227.
151	0.5	4.9	0.9	8.8	68.5	673.	24.1	237.
214	0.3	3.0	1.0	9.9	69.3	684.	24.0	237.
242	0.1	1.0	1.4	13.8	68.6	674.	24.1	237.
270	0.2	2.0	1.2	11.7	67.5	658.	23.6	230.
306	0.2	1.9	1.0	9.7	69.0	666.	25.3	244.
364	0.2	1.9	1.0	9.4	69.0	645.	25.1	235.
536	0.5	4.6	1.5	13.7	69.6	636.	25.3	231.
602	0.4	3.5	1.1	9.5	69.6	601.	26.1	225.
732	0.6	4.2	2.8	19.7	66.5	469.	25.2	177.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.04 (0.02)	0.4	0.04	0.4	0.04	0.4
21	0.02 (0.005)	0.2	0.02	0.2	0.02	0.2
49	0.04 (0.01)	0.4	0.04	0.4	0.04	0.4
151	0.09 (0.02)	0.9	0.09	0.9	0.09	0.9
214	0.11 (0.009)	1.1	0.11	1.1	0.09	0.9
242	0.13 (0.03)	1.3	0.13	1.3	0.13	1.3
270	0.12 (0.05)	1.2	0.12	1.2	0.12	1.2
306	0.16 (0.01)	1.5	0.16	1.5	0.16	1.5
364	0.18 (0.02)	1.7	0.17	1.6	0.17	1.6
536	0.28 (0.03)	2.6	0.21	1.9	0.16	1.5
602	0.34 (0.05)	2.9	--	--	0.21	1.8
732	0.48 (0.02)	3.4	0.43	3.0	0.16	1.1

Table 17. Mass loss and organic-chemical changes during decomposition of white pine wood incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	8.1	81.0	1.5	15.0	9.6	96.0
801124	21	99.8 (0.2)	7.2	71.9	3.2	31.9	10.4	104.
810403	151	98.8 (0.5)	6.9	68.2	3.1	30.6	11.0	109.
810703	242	98.0 (1.0)	3.8	37.2	4.3	42.1	8.1	79.4
811102	364	90.0 (4.9)	2.7	24.3	2.7	24.3	5.4	48.6
820423	536	88.6 (3.3)	1.9	16.8	2.6	23.0	4.5	39.8
821105	732	65.0 (1.7)	3.0	19.5	5.0	32.5	8.0	52.0

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.6	6.0	0.4	4.0	68.3	683.0	22.1	221.0
21	0.5	5.0	1.6	16.0	--	--	--	--
151	0.3	3.0	1.2	11.9	--	--	--	--
242	0.6	5.9	0.9	8.8	--	--	--	--
364	0.2	1.8	1.4	12.6	--	--	--	--
536	0.3	2.7	1.2	10.6	--	--	--	--
732	0.7	4.6	2.9	18.9	67.5	439.	24.5	159.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.04 (0.02)	0.4	0.04	0.4	0.04	0.4
21	0.02 (0.01)	0.2	--	--	--	--
151	0.08 (0.01)	0.8	--	--	--	--
242	0.13 (0.02)	1.3	--	--	--	--
364	0.16 (0.05)	1.4	0.16	1.4	--	--
536	0.23 (0.05)	2.0	--	--	--	--
732	0.51 (0.03)	3.3	0.39	2.5	0.14	0.9

Table 18. Mass loss and organic-chemical changes during decomposition of white pine wood incubated in coarse-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	8.1	81.0	1.5	15.0	9.6	96.0
801124	21	100.1 (0.2)	7.1	71.1	4.1	41.0	11.2	112.
810403	151	99.7 (0.6)	7.3	72.8	1.7	16.9	9.0	89.7
810703	242	98.7 (0.4)	4.7	46.4	2.7	26.6	7.4	73.0
811102	364	95.2 (3.7)	4.0	38.1	2.7	25.7	6.7	63.8
820423	536	92.6 (2.1)	2.0	18.5	3.3	30.6	5.2	48.2
821105	732	74.0 (2.3)	1.7	12.6	2.6	19.2	4.3	31.8

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	0.6	6.0	0.4	4.0	68.3	683.0	22.1	221.0
21	0.4	4.0	1.8	18.0	--	--	--	--
151	0.6	6.0	1.6	16.0	--	--	--	--
242	0.3	3.0	1.3	12.8	--	--	--	--
364	0.2	1.9	1.0	9.5	--	--	--	--
536	0.4	3.7	1.4	13.0	--	--	--	--
732	0.5	3.7	2.1	15.5	70.3	520.	25.4	188.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.04 (0.02)	0.9	0.01	0.1	0.08	0.8
21	0.02 (0.01)	0.2	--	--	--	--
151	0.08 (0.006)	0.8	--	--	--	--
242	0.16 (0.04)	1.6	--	--	--	--
364	0.21 (0.05)	2.0	0.21	2.0	--	--
536	0.30 (0.05)	2.8	--	--	--	--
732	0.48 (0.02)	3.6	0.43	3.2	0.15	1.1

Table 19. Mass loss and organic-chemical changes during decomposition of sugar maple leaves incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	11.2	112.0	33.6	336.0	44.8	448.0
801124	21	89.6 (1.9)	14.2	127.	29.2	262.	43.4	389.
801222	49	86.2 (1.1)	12.2	105.	23.2	200.	35.2	383.
810403	151	78.7 (0.5)	14.0	110.	20.6	162.	34.6	272.
810605	214	72.3 (2.6)	9.4	68.0	20.4	147.	29.8	215.
810703	242	62.4 (3.2)	7.3	45.6	15.1	94.2	22.5	140.
810731	270	58.5 (4.2)	4.2	24.6	17.9	105.	22.1	129.
810905	306	50.9 (0.6)	10.0	50.9	16.2	82.5	26.2	133.
811102	364	41.6 (1.7)	6.8	28.3	14.1	58.7	20.9	86.9
820423	536	44.9 (2.9)	6.4	28.7	13.2	59.3	19.6	88.0
820682	602	38.9 (0.9)	5.2	20.2	14.4	56.0	19.6	76.2
821105	732	24.6 (6.3)	4.9	12.1	16.8	41.3	21.7	33.4

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	9.7	97.0	7.2	72.0	43.1	431.0	12.1	121.0
21	8.2	73.5	7.8	69.9	41.0	367.	15.6	140.
49	6.1	52.5	6.9	59.5	45.3	390.	19.5	168.
151	4.9	38.5	5.3	41.7	45.5	358.	19.9	157.
214	4.9	35.4	5.2	37.6	48.3	349.	21.9	158.
242	2.5	15.6	3.7	23.1	48.9	305.	28.6	178.
270	2.3	13.5	3.1	18.1	43.6	255.	34.3	201.
306	1.9	9.7	3.5	17.8	41.2	210.	32.3	164.
364	2.0	8.3	3.2	13.3	44.1	183.	35.0	146.
536	2.1	9.4	3.1	13.9	46.7	210.	33.7	151.
602	1.2	4.7	2.1	8.2	46.6	181.	33.8	132.
732	0.9	2.2	2.2	5.4	38.0	93.5	40.3	99.1

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.28	2.8	0.23	2.3
21	0.86 (0.02)	7.7	0.65	5.8	0.29	2.6
49	0.88 (0.007)	7.6	0.57	4.9	0.17	1.5
151	1.01 (0.01)	7.9	0.64	5.0	0.18	1.4
214	1.18 (0.04)	8.5	0.87	6.3	0.19	1.4
242	1.48 (0.17)	9.2	0.99	6.2	0.34	2.1
270	1.70 (0.08)	9.9	1.09	6.4	0.40	2.3
306	1.65 (0.03)	8.4	1.10	5.6	0.33	1.7
364	1.85 (0.07)	7.7	1.16	4.8	0.36	1.5
536	1.75 (0.10)	7.9	0.83	3.7	0.36	1.6
602	2.01 (0.15)	7.8	--	--	0.33	1.3
732	1.48 (0.15)	3.6	0.93	2.3	0.61	1.5

Table 20. Mass loss and organic-chemical changes during decomposition of sugar maple leaves incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	11.2	112.0	33.6	336.0	44.8	448.0
801124	21	88.2 (0.7)	12.8	113.	29.5	260.	42.3	373.
810403	151	73.5 (2.5)	11.1	81.6	20.3	149.	31.4	230.
810703	242	53.4 (2.4)	9.3	49.7	15.6	83.3	24.9	133.
811102	364	35.9 (1.8)	6.1	21.9	10.5	37.7	16.6	59.6
820423	536	32.6 (3.2)	3.3	10.8	11.6	37.8	14.9	48.6
821105	732	19.5 (5.3)	3.7	7.2	14.8	28.9	18.5	36.1

DAYS INCUBATED	SOLUBLE PHENOLS		CARB		ACID SOLUBLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	9.7	97.0	7.2	72.0	43.1	431.0	12.1	121.0
21	6.3	55.6	8.3	73.2	--	--	--	--
151	4.1	30.1	4.8	35.3	--	--	--	--
242	1.8	9.6	2.8	15.0	--	--	--	--
364	0.8	2.9	2.1	7.5	42.5	153.	40.9	147.
536	1.4	4.6	2.3	7.5	--	--	--	--
732	0.9	1.8	2.5	4.9	39.3	76.6	42.2	82.3

DAYS INCUBATED	NITROGEN TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.28	2.8	0.23	2.3
21	0.91 (0.05)	8.0	--	--	--	--
151	1.08 (0.16)	7.9	--	--	--	--
242	1.61 (0.41)	8.6	--	--	--	--
364	2.06 (0.04)	7.4	1.36	4.9	--	--
536	1.84 (0.06)	6.0	--	--	--	--
732	1.65 (0.16)	3.2	1.58	3.1	0.70	1.4

Table 21. Mass loss and organic-chemical changes during decomposition of sugar maple leaves incubated in coarse-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	11.2	112.0	33.6	336.0	44.8	448.0
801124	21	87.3 (1.2)	10.7	93.4	23.6	206.	34.3	299.
810403	151	75.3 (1.1)	13.1	98.6	16.2	122.	29.3	221.
810703	242	65.1 (3.0)	10.4	67.7	14.5	94.4	24.9	162.
811102	364	45.3 (12.9)	4.6	20.8	10.0	45.3	14.6	66.1
820423	536	34.4 (3.9)	2.0	6.9	11.5	39.6	13.5	46.4
821105	732	15.1 (5.7)	5.8	8.8	14.1	21.3	19.9	30.0

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	9.7	97.0	7.2	72.0	43.1	431.0	12.1	121.0
21	6.0	52.4	7.2	62.9	--	--	--	--
151	4.0	30.1	4.6	34.6	--	--	--	--
242	2.4	15.6	3.5	22.8	--	--	--	--
364	0.9	4.1	2.5	11.3	42.0	190.	43.4	197.
536	1.0	3.4	2.0	6.9	--	--	--	--
732	0.5	0.8	1.5	2.3	42.4	64.0	37.7	56.9

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.28	2.8	0.23	2.3
21	0.98 (0.007)	8.6	--	--	--	--
151	0.96 (0.11)	7.2	--	--	--	--
242	1.39 (0.08)	6.3	--	--	--	--
364	2.20 (0.29)	10.0	1.00	4.5	--	--
536	1.98 (0.14)	6.8	--	--	--	--
732	1.82 (0.18)	2.8	1.75	2.6	0.74	1.1

Table 22. Mass loss and organic-chemical changes during decomposition of sugar maple leaves incubated in fine-mesh litter bags on the forest floor of the aspen stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	11.2	112.0	33.6	336.0	44.8	448.0
801124	21	90.0 (0.7)	12.9	116.	25.5	230.	38.4	346.
810403	151	78.8 (2.9)	14.6	115.	22.4	177.	37.0	292.
810703	242	57.5 (3.5)	10.4	59.8	14.8	85.1	25.2	145.
811102	364	39.3 (5.4)	5.2	20.4	8.0	31.4	13.2	51.9
820423	536	38.2 (1.8)	6.4	24.4	12.8	48.9	19.2	73.3
821105	732	33.2 (6.4)	4.3	14.3	17.0	56.4	21.3	70.7

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	9.7	97.0	7.2	72.0	43.1	431.0	12.1	121.0
21	8.3	74.7	9.1	81.9	--	--	--	--
151	4.9	38.6	6.6	52.0	--	--	--	--
242	3.1	17.8	3.1	17.8	--	--	--	--
364	0.8	3.1	2.0	7.9	51.3	202.	35.5	140.
536	0.5	1.9	1.4	5.3	--	--	--	--
732	1.2	4.0	2.6	8.6	37.5	125.	41.2	137.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.28	2.8	0.23	2.3
21	0.85 (0.002)	7.7	--	--	--	--
151	0.93 (0.32)	7.3	--	--	--	--
242	1.64 (0.17)	9.4	--	--	--	--
364	1.82 (0.29)	7.2	1.06	4.2	--	--
536	1.75 (0.12)	6.7	--	--	--	--
732	1.33 (0.15)	4.4	0.80	2.7	0.54	1.8

Table 23. Mass loss and organic-chemical changes during decomposition of sugar maple leaves incubated in fine-mesh litter bags on the forest floor of the white oak stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	11.2	112.0	33.6	336.0	44.8	448.0
801124	21	89.9 (0.8)	11.4	102.	30.9	278.	42.3	380.
810403	151	78.5 (1.6)	11.2	87.9	25.1	197.	36.3	285.
810703	242	65.7 (3.0)	9.6	63.1	16.8	110.	26.4	173.
811102	364	41.7 (3.9)	5.9	24.6	14.7	61.3	20.6	85.9
820423	536	41.1 (4.0)	3.6	14.8	11.8	48.5	15.4	63.3
821105	732	30.1 (0.5)	2.9	8.7	19.0	57.2	21.9	65.9

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	9.7	97.0	7.2	72.0	43.1	431.0	12.1	121.0
21	8.1	72.8	8.9	80.0	--	--	--	--
151	6.1	47.9	6.8	53.4	--	--	--	--
242	4.0	26.3	3.5	23.0	--	--	--	--
364	2.4	10.0	3.9	16.3	42.7	178.	36.7	153.
536	1.6	6.6	2.8	11.5	--	--	--	--
732	1.6	4.8	3.1	9.3	37.9	114.	40.2	121.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.28	2.8	0.23	2.3
21	0.90 (0.03	8.1	--	--	--	--
151	0.87 (0.12)	6.8	--	--	--	--
242	1.52 (0.38)	10.0	--	--	--	--
364	1.56 (0.18)	6.5	1.01	4.2	--	--
536	1.63 (0.07)	6.7	--	--	--	--
732	1.60 (0.17)	4.8	1.53	4.6	--	--

Table 24. Mass loss and organic-chemical changes during decomposition of sugar maple leaves incubated in fine-mesh litter bags on the forest floor of the white pine stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	11.2	112.0	33.6	336.0	44.8	448.0
801124	21	91.4 (5.2)	11.3	103.	29.0	265.	40.3	368.
810403	151	80.2 (2.3)	13.9	111.	28.9	232.	42.8	343.
810703	242	66.0 (2.5)	7.6	50.2	18.4	121.	26.0	172.
811102	364	40.9 (3.2)	5.2	21.3	13.5	55.2	18.7	76.5
820423	536	37.2 (3.3)	3.6	13.4	8.8	32.7	12.5	46.5
821105	732	24.5 (3.7)	4.6	11.3	18.1	44.3	22.7	55.6

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	9.7	97.0	7.2	72.0	43.1	431.0	12.1	121.0
21	7.0	64.0	8.5	77.7	--	--	--	--
151	7.1	56.9	7.6	61.0	--	--	--	--
242	4.6	30.4	4.3	28.4	--	--	--	--
364	2.0	8.2	3.2	13.1	43.9	180.	37.4	153.
536	1.3	4.8	2.2	8.2	--	--	--	--
732	1.5	3.7	3.2	7.8	37.7	92.4	39.6	97.0

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.28	2.8	0.23	2.3
21	0.82 (0.03)	7.5	--	--	--	--
151	0.83 (0.07)	6.7	--	--	--	--
242	1.26 (0.05)	8.3	--	--	--	--
364	1.73 (0.11)	7.1	1.19	4.9	--	--
536	1.77 (0.11)	6.6	--	--	--	--
732	1.56 (0.17)	3.8	1.42	3.5	0.64	1.6

Table 25. Mass loss and organic-chemical changes during decomposition of sugar maple leaves incubated in fine-mesh litter bags on the forest floor of the hemlock stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	11.2	112.0	33.6	336.0	44.8	448.0
801124	21	90.0 (0.5)	10.1	90.9	30.5	275.	40.6	365.
810403	151	77.7 (1.2)	14.8	115.	22.3	173.	37.1	288.
810703	242	66.9 (2.2)	9.6	64.2	19.7	132.	29.3	196.
811102	364	45.6 (3.1)	5.5	25.1	12.2	55.6	17.7	80.7
820423	536	48.5 (2.5)	3.8	18.4	15.8	76.6	19.6	95.1
821105	732	33.1 (2.9)	4.8	15.9	11.9	39.4	16.7	55.3

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	9.7	97.0	7.2	72.0	43.1	431.0	12.1	121.0
21	8.7	78.3	8.2	73.8	--	--	--	--
151	4.9	38.0	6.0	46.6	--	--	--	--
242	5.7	38.1	4.2	28.1	--	--	--	--
364	2.3	10.5	3.8	17.3	50.1	228.	32.2	147.
536	2.2	10.7	3.1	15.0	--	--	--	--
732	1.0	3.3	2.5	8.3	42.5	141.	40.8	135.

	NITROGEN					
DAYS INCUBATED	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.28	2.8	0.23	2.3
21	0.88 (0.10)	7.9	--	--	--	--
151	0.93 (0.18)	7.2	--	--	--	--
242	1.45 (0.24)	9.7	--	--	--	--
364	1.42 (0.22)	6.5	1.01	4.6	--	--
536	1.68 (0.12)	8.1	--	--	--	--
732	2.06 (0.30)	6.8	1.91	6.3	0.82	2.7

Table 26. Mass loss and organic-chemical changes during decomposition of aspen leaves incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	14.2	142.0	16.9	169.0	31.1	311.0
801124	21	97.8 (1.1)	16.4	160.	11.3	111.	27.7	271.
801222	49	93.5 (1.6)	15.9	149.	10.2	95.4	26.1	244.
810403	151	87.6 (2.0)	15.4	135.	6.3	55.2	21.7	190.
810605	214	82.2 (3.2)	16.0	132.	7.4	60.8	23.4	192.
810703	242	75.3 (1.5)	14.4	108.	7.0	52.7	21.4	161.
810731	270	73.6 (2.3)	10.6	78.0	8.3	61.1	18.9	139.
810905	306	64.8 (1.4)	9.6	62.2	6.9	44.7	16.5	107.
811102	364	56.7 (2.3)	7.2	40.8	7.4	42.0	14.6	82.8
820423	536	53.6 (2.8)	5.4	28.9	7.5	40.2	12.9	69.1
820682	602	43.1 (3.2)	4.4	19.0	11.7	50.4	16.1	69.4
821105	732	44.7 (4.1)	5.2	23.2	11.9	53.2	17.1	76.4

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	2.7	27.0	5.4	54.0	47.5	475.0	21.4	214.0
21	1.3	12.7	3.9	38.1	46.0	450.	26.3	257.
49	1.5	14.0	3.2	30.0	46.4	434.	27.5	257.
151	1.2	10.5	2.2	19.3	43.7	383.	34.6	303.
214	1.3	10.7	2.1	17.3	44.7	367.	31.9	262.
242	0.7	5.3	2.0	15.1	42.6	321.	36.0	271.
270	0.7	5.2	3.2	23.6	39.3	289.	41.8	308.
306	0.9	5.8	1.9	12.3	39.6	257.	43.9	284.
364	0.5	2.8	1.8	10.2	41.3	234.	44.1	250.
536	0.8	4.3	1.9	12.3	39.6	257.	43.9	284.
602	0.7	3.0	2.4	10.3	40.5	175.	46.4	200.
732	0.8	3.6	2.5	11.2	35.2	157.	47.7	213.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.43	4.3	0.28	2.8
21	0.97 (0.07)	9.5	0.72	7.0	0.42	4.1
49	1.06 (0.05)	9.9	0.71	6.6	0.22	2.1
151	1.19 (0.20)	10.4	0.90	7.9	0.37	3.2
214	1.34 (0.04)	11.0	1.03	8.5	0.33	2.7
242	1.48 (0.18)	11.1	1.20	9.0	0.49	3.7
270	1.65 (0.03)	12.1	1.21	8.9	0.64	4.7
306	1.85 (0.03)	12.0	1.57	10.2	0.51	3.3
364	1.95 (0.50)	11.1	1.72	9.8	0.56	3.2
536	1.98 (0.23)	10.6	1.65	8.8	0.77	4.1
602	2.40 (0.26)	10.3	--	--	0.72	3.1
732	2.18 (0.37)	9.7	1.90	8.5	1.03	4.6

Table 27. Mass loss and organic-chemical changes during decomposition of aspen leaves incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	14.2	142.0	16.9	169.0	31.1	311.0
801124	21	95.5 (1.4)	15.4	147.	14.3	137.	29.7	284.
810403	151	84.3 (6.3)	15.0	126.	7.7	64.9	22.7	191.
810703	242	64.1 (2.5)	12.2	78.2	4.0	25.6	16.2	104.
811102	364	51.0 (2.5)	6.6	33.7	6.3	32.1	12.9	65.8
820423	536	43.8 (6.4)	4.1	18.0	8.5	37.2	12.6	55.2
821105	732	33.2 (1.6)	5.1	16.9	12.2	40.5	17.3	57.4

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	2.7	27.0	5.4	54.0	47.5	475.0	21.4	214.0
21	1.7	16.2	4.5	43.0	--	--	--	--
151	0.8	6.7	2.0	16.9	--	--	--	--
242	0.5	3.2	1.0	6.4	--	--	--	--
364	0.5	2.6	1.8	9.2	--	--	--	--
536	0.8	3.5	1.9	8.3	--	--	--	--
732	1.5	5.0	3.8	12.6	38.1	126.	44.6	148.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.43	4.3	0.28	2.8
21	1.04 (0.07)	9.9	--	--	--	--
151	1.47 (0.22)	12.4	--	--	--	--
242	1.88 (0.06)	12.1	--	--	--	--
364	2.01 (0.23)	10.3	1.98	10.1	--	--
536	2.26 (0.24)	9.9	--	--	--	--
732	1.48 (0.25)	4.9	1.43	4.7	0.63	2.1

Table 28. Mass loss and organic-chemical changes during decomposition of aspen leaves incubated in coarse-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	14.2	142.0	16.9	169.0	31.1	311.0
801124	21	98.2 (1.8)	15.8	155.	12.3	121.	28.1	276.
810403	151	90.2 (3.0)	15.2	137.	8.5	76.7	23.7	214.
810703	242	79.8 (4.1)	15.0	120.	9.7	77.4	24.7	197.
811102	364	49.6 (2.6)	7.4	36.7	8.0	39.7	15.4	76.4
820423	536	47.0 (9.0)	4.2	19.7	9.6	45.1	13.2	62.0
821105	732	26.7 (6.1)	3.6	9.6	13.4	35.8	17.0	45.4

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	2.7	27.0	5.4	54.0	47.5	475.0	21.4	214.0
21	1.8	17.7	5.3	52.0	--	--	--	--
151	1.0	9.0	2.5	22.6	--	--	--	--
242	0.6	4.8	2.3	18.4	--	--	--	--
364	0.6	3.0	2.3	11.4	--	--	--	--
536	0.6	2.8	2.1	9.9	--	--	--	--
732	1.0	2.7	2.7	7.2	38.9	104.	44.1	118.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.43	4.3	0.28	2.8
21	0.97 (0.11)	9.5	--	--	--	--
151	1.14 (0.11)	10.3	--	--	--	--
242	1.47 (0.08)	11.7	--	--	--	--
364	1.92 (0.41)	9.5	1.65	8.2	--	--
536	2.12 (0.15)	10.0	--	--	--	--
732	1.96 (0.30)	5.2	1.92	5.1	0.97	2.6

Table 29. Mass loss and organic-chemical changes during decomposition of aspen leaves incubated in fine-mesh litter bags on the forest floor of the aspen stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	14.2	142.0	16.9	169.0	31.1	311.0
801124	21	96.4 (0.9)	15.6	150.	14.4	139.	30.0	289.
810403	151	84.8 (2.1)	15.4	131.	8.3	70.4	23.7	201.
810703	242	75.6 (2.1)	13.6	103.	7.5	56.7	21.1	160.
811102	364	56.1 (2.8)	6.3	35.3	7.4	41.5	13.7	76.9
820423	536	48.4 (3.8)	1.9	9.2	9.9	47.9	11.8	57.1
821105	732	37.6 (2.6)	3.5	13.1	10.1	38.0	13.6	51.1

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	2.7	27.0	5.4	54.0	47.5	475.0	21.4	214.0
21	1.9	18.3	5.1	49.2	--	--	--	--
151	1.5	12.7	2.8	23.7	--	--	--	--
242	0.5	3.8	1.9	14.4	--	--	--	--
364	0.7	3.9	2.0	11.2	43.4	243.	42.9	241.
536	0.4	1.9	1.9	9.2	--	--	--	--
732	1.2	4.5	3.1	11.7	39.7	149.	46.7	176.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.43	4.3	0.28	2.8
21	1.00 (0.08)	9.6	--	--	--	--
151	1.38 (0.27)	11.7	--	--	--	--
242	1.42 (0.08)	10.7	--	--	--	--
364	2.10 (0.24)	11.8	1.64	9.2	--	--
536	1.89 (0.19)	9.1	--	--	--	--
732	1.29 (0.17)	4.9	1.09	4.1	0.50	1.9

Table 30. Mass loss and organic-chemical changes during decomposition of aspen leaves incubated in fine-mesh litter bags in the mineral soil of the aspen stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	14.2	142.0	16.9	169.0	31.1	311.0
801124	21	93.0 (2.2)	15.2	141.	11.3	105.	26.5	246.
810403	151	79.1 (2.6)	16.5	131.	5.7	45.1	22.2	176.
810703	242	66.2 (3.3)	14.2	94.0	11.6	76.8	25.8	171.
811102	364	54.0 (4.0)	4.9	26.5	6.5	35.1	11.4	61.6
820423	536	51.0 (3.4)	5.3	27.0	8.8	44.9	14.1	71.9
821105	732	38.3 (3.2)	5.7	21.8	8.7	33.3	14.4	55.2

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	2.7	27.0	5.4	54.0	47.5	475.0	21.4	214.0
21	1.4	13.0	3.2	29.8	--	--	--	--
151	1.1	8.7	2.3	18.2	--	--	--	--
242	1.0	6.6	2.0	13.2	--	--	--	--
364	0.3	1.6	1.3	7.0	40.5	219.	48.1	260.
536	0.4	2.0	1.4	7.1	--	--	--	--
732	0.7	2.7	2.0	7.7	34.7	133.	50.2	192.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.43	4.3	0.28	2.8
21	0.91 (0.06)	8.5	--	--	--	--
151	1.42 (0.32)	11.2	--	--	--	--
242	1.61 (0.29)	10.7	--	--	--	--
364	2.15 (0.21)	11.6	1.83	9.9	--	--
536	2.11 (0.10)	10.8	--	--	--	--
732	1.75 (0.25)	6.7	1.73	6.6	0.90	3.4

Table 31. Mass loss and organic-chemical changes during decomposition of aspen leaves incubated in coarse-mesh litter bags on the forest floor of the aspen stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	14.2	142.0	16.9	169.0	31.1	311.0
801124	21	98.4 (0.7)	15.8	155.	12.3	121.	28.1	276.
810403	151	89.7 (1.3)	16.5	148.	8.4	75.3	24.9	223.
810703	242	79.5 (3.3)	12.1	96.2	4.0	31.8	16.1	128.
811102	364	56.6 (2.9)	10.8	61.1	5.2	29.4	16.0	90.6
820423	536	54.9 (9.4)	3.7	20.3	7.4	40.6	11.1	60.9
821105	732	14.1 (1.5)	5.7	8.0	8.7	12.3	14.4	20.3

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	2.7	27.0	5.4	54.0	47.5	475.0	21.4	214.0
21	1.8	17.7	5.0	49.2	--	--	--	--
151	1.2	10.8	2.9	26.0	--	--	--	--
242	1.1	8.7	2.0	15.9	--	--	--	--
364	0.4	2.3	1.7	9.6	42.8	242.	41.2	233.
536	0.7	3.8	2.1	11.5	--	--	--	--
732	0.7	1.0	2.0	2.8	36.4	51.3	49.2	69.4

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.43	4.3	0.28	2.8
21	0.95 (0.06)	9.3	--	--	--	--
151	1.12 (0.06)	10.0	--	--	--	--
242	1.43 (0.03)	11.4	--	--	--	--
364	1.97 (0.10)	11.2	1.45	8.2	--	--
536	1.85 (0.14)	10.2	--	--	--	--
732	1.57 (0.22)	2.2	1.50	2.1	0.74	1.0

Table 32. Mass loss and organic-chemical changes during decomposition of white oak leaves incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	7.7	77.0	24.7	247.0	32.4	324.0
801124	21	98.8 (0.8)	10.3	102.	25.4	251.	35.7	353.
801222	49	93.9 (10.5)	9.9	93.0	21.7	204.	31.6	297.
810403	151	93.6 (1.5)	8.7	81.4	17.0	159.	25.7	241.
810605	214	89.4 (2.2)	9.0	80.5	20.9	187.	29.9	267.
810703	242	81.0 (1.9)	8.9	72.1	11.4	92.3	20.3	164.
810731	270	77.7 (2.4)	4.1	31.9	16.2	126.	20.3	158.
810905	306	67.6 (2.3)	8.2	55.4	13.7	92.6	21.9	148.
811102	364	59.6 (5.5)	4.8	28.6	12.5	74.5	17.3	103.
820423	536	56.3 (4.6)	4.5	25.3	14.8	83.3	19.3	109.
820682	602	48.4 (4.2)	4.9	23.7	14.2	68.7	19.1	92.4
821105	732	35.2 (4.1)	7.0	24.6	9.9	34.8	16.9	59.5

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	7.3	73.0	7.3	73.0	47.4	474.0	20.2	202.0
21	7.3	72.1	7.8	77.1	43.5	430.	20.8	206.
49	6.7	62.9	6.6	62.0	47.6	447.	20.8	195.
151	4.3	40.2	4.7	44.0	51.2	479.	23.1	216.
214	2.8	25.0	4.4	39.3	46.7	417.	23.4	209.
242	2.5	20.3	2.6	21.1	53.1	430.	26.6	215.
270	3.5	27.2	3.5	27.2	48.4	376.	31.3	243.
306	1.7	11.5	3.0	20.3	44.8	303.	33.3	225.
364	2.1	12.5	4.0	23.8	49.2	293.	33.5	200.
536	1.9	10.7	2.9	16.3	47.9	270.	32.8	185.
602	1.4	6.8	2.3	11.1	47.0	227.	33.9	164.
732	1.1	3.9	2.7	9.5	43.7	154.	39.4	139.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.84 (0.05)	8.4	0.37	3.7	0.30	3.0
21	0.90 (0.11)	8.9	0.64	6.3	0.29	2.9
49	0.93 (0.08)	8.7	0.66	6.2	0.26	2.4
151	0.94 (0.09)	8.8	0.64	6.0	0.22	2.1
214	1.01 (0.01)	9.0	0.67	6.0	0.29	2.6
242	1.20 (0.05)	9.7	0.81	6.6	0.31	2.5
270	1.33 (0.03)	10.3	0.94	7.3	0.46	3.6
306	1.35 (0.06)	9.1	1.03	7.0	0.44	3.0
364	1.57 (0.22)	9.4	1.18	7.0	0.46	2.7
536	1.52 (0.13)	8.6	1.17	6.6	0.39	2.2
602	1.75 (0.25)	8.5	--	--	0.53	2.6
732	1.71 (0.21)	6.0	1.49	5.2	0.73	2.6

Table 33. Mass loss and organic-chemical changes during decomposition of white oak leaves incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	7.7	77.0	24.7	247.0	32.4	324.0
801124	21	97.5 (1.4)	10.2	99.5	28.3	276.	38.5	375.
810403	151	87.8 (1.4)	9.8	86.0	19.5	171.	29.3	257.
810703	242	72.0 (3.2)	9.9	71.3	16.2	117.	26.1	188.
811102	364	50.0 (4.4)	6.1	30.5	12.5	62.5	18.6	93.0
820423	536	41.0 (3.3)	4.0	12.3	13.1	53.7	17.1	70.1
821105	732	32.8 (3.2)	4.5	14.8	12.5	41.0	17.0	55.8

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	7.3	73.0	7.3	73.0	47.4	474.0	20.2	202.0
21	7.0	68.3	8.7	84.8	--	--	--	--
151	3.8	33.3	4.5	39.5	--	--	--	--
242	2.7	19.4	3.1	22.3	--	--	--	--
364	1.6	8.0	3.2	16.0	--	--	--	--
536	0.8	3.3	1.8	7.4	--	--	--	--
732	0.9	3.0	2.5	8.2	42.7	140.	40.3	132.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.84 (0.05)	8.4	0.37	3.7	0.30	3.0
21	0.85 (0.04)	8.3	--	--	--	--
151	0.99 (0.07)	8.7	--	--	--	--
242	1.52 (0.23)	10.9	--	--	--	--
364	1.79 (0.20)	9.0	1.48	7.4	--	--
536	1.66 (0.14)	6.8	--	--	--	--
732	1.65 (0.18)	5.4	1.56	5.1	0.67	2.2

Table 34. Mass loss and organic-chemical changes during decomposition of white oak leaves incubated in coarse-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	7.7	77.0	24.7	247.0	32.4	324.0
801124	21	99.2 (0.7)	10.2	101.	29.6	294.	39.8	395.
810403	151	91.4 (0.2)	11.0	101.	25.8	236.	36.8	336.
810703	242	78.9 (2.2)	9.6	75.7	14.9	118.	24.5	193.
811102	364	56.5 (5.6)	5.7	32.2	13.7	77.4	19.4	110.
820423	536	60.4 (9.3)	3.3	19.9	14.4	87.0	17.7	107.
821105	732	40.0 (7.7)	7.0	28.0	12.9	51.6	19.9	79.6

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	7.3	73.0	7.3	73.0	47.4	474.0	20.2	202.0
21	7.7	76.4	8.5	84.3	--	--	--	--
151	7.6	69.4	3.7	33.8	--	--	--	--
242	3.2	25.2	3.0	23.7	--	--	--	--
364	1.6	9.0	3.2	18.1	42.9	242.	37.7	213.
536	1.1	6.6	2.8	16.9	--	--	--	--
732	1.1	4.4	2.7	10.8	41.5	166.	38.6	154.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.84 (0.05)	8.4	0.37	3.7	0.30	3.0
21	0.92 (0.04)	9.1	--	--	--	--
151	0.98 (0.04)	9.0	--	--	--	--
242	1.41 (0.19)	11.1	--	--	--	--
364	1.93 (0.14)	10.9	1.58	8.9	--	--
536	1.76 (0.12)	10.6	--	--	--	--
732	1.68 (0.19)	6.7	1.56	6.2	0.71	2.8

Table 35. Mass loss and organic-chemical changes during decomposition of white oak leaves incubated in fine-mesh litter bags on the forest floor of the white oak stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	7.7	77.0	24.7	247.0	32.4	324.0
801124	21	97.9 (0.4)	9.9	96.9	29.6	290.	39.5	387.
810403	151	92.5 (1.0)	9.6	88.8	23.0	213.	32.6	302.
810703	242	80.1 (2.2)	11.1	88.9	16.1	129.	27.2	218.
811102	364	55.4 (3.4)	4.9	27.1	14.4	79.8	19.3	107.
820423	536	51.9 (6.0)	2.1	10.9	13.9	72.1	16.0	83.0
821105	732	27.3 (8.4)	3.0	8.2	13.2	36.0	16.2	44.2

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	7.3	73.0	7.3	73.0	47.4	474.0	20.2	202.0
21	7.5	73.4	7.2	70.5	--	--	--	--
151	6.3	58.3	5.8	53.7	--	--	--	--
242	4.0	32.0	3.6	28.8	--	--	--	--
364	2.1	11.6	4.0	22.2	--	--	--	--
536	1.6	8.3	3.0	15.6	--	--	--	--
732	1.0	2.7	3.3	9.0	46.3	126.	37.5	102.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.84 (0.05)	8.4	0.37	3.7	0.30	3.0
21	0.90 (0.05)	8.8	--	--	--	--
151	0.97 (0.05)	9.0	--	--	--	--
242	1.19 (0.10)	9.5	--	--	--	--
364	1.71 (0.07)	9.5	1.12	6.2	--	--
536	1.52 (0.12)	7.9	--	--	--	--
732	1.71 (0.09)	4.7	1.56	4.3	0.57	1.6

Table 36. Mass loss and organic-chemical changes during decomposition of white oak leaves incubated in fine-mesh litter bags in the mineral soil of the white oak stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	7.7	77.0	24.7	247.0	32.4	324.0
801124	21	98.8 (2.6)	9.3	91.9	27.1	268.	36.4	360.
810403	151	88.0 (2.3)	7.7	67.8	18.5	163.	26.2	231.
810703	242	69.7 (6.1)	9.8	68.3	14.3	99.7	24.1	168.
811102	364	49.3 (3.6)	4.3	21.1	11.0	54.2	15.3	75.4
820423	536	49.7 (3.8)	2.7	13.4	10.6	52.7	13.3	66.1
821105	732	32.1 (4.2)	3.7	11.9	16.2	52.0	19.9	63.9

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	7.3	73.0	7.3	73.0	47.4	474.0	20.2	202.0
21	7.5	74.1	8.6	85.0	--	--	--	--
151	3.3	29.0	4.2	37.0	--	--	--	--
242	2.5	17.4	3.5	24.4	--	--	--	--
364	1.2	5.9	2.9	14.3	--	--	--	--
536	0.7	3.5	2.0	9.9	--	--	--	--
732	1.1	3.5	3.5	11.2	41.2	132.	38.9	125.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.84 (0.05)	8.4	0.37	3.7	0.30	3.0
21	0.86 (0.04)	8.5	--	--	--	--
151	0.94 (0.06)	8.3	--	--	--	--
242	1.32 (0.09)	9.2	--	--	--	--
364	1.79 (0.12)	8.8	1.26	6.2	--	--
536	1.35 (0.07)	6.7	--	--	--	--
732	1.56 (0.07)	5.0	1.41	4.5	0.71	2.3

Table 37. Mass loss and organic-chemical changes during decomposition of white oak leaves incubated in coarse-mesh litter bags on the forest floor of the white oak stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	7.7	77.0	24.7	247.0	32.4	324.0
801124	21	98.6 (0.8)	10.0	98.6	28.9	285.	38.9	384.
810403	151	93.6 (1.9)	11.1	104.	23.7	222.	34.8	326.
810703	242	83.9 (3.2)	8.9	74.7	16.4	138.	25.3	212.
811102	364	59.8 (3.7)	4.2	25.1	12.4	74.2	16.6	99.3
820423	536	55.4 (4.6)	4.3	23.8	14.1	78.1	18.4	102.
821105	732	33.2 (3.5)	4.9	16.3	14.1	46.8	19.0	63.1

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	7.3	73.0	7.3	73.0	47.4	474.0	20.2	202.0
21	8.5	83.8	8.1	79.9	--	--	--	--
151	5.4	50.5	6.1	57.1	--	--	--	--
242	4.2	35.2	3.7	31.0	--	--	--	--
364	1.4	8.4	3.2	19.1	--	--	--	--
536	1.0	5.5	2.8	15.5	--	--	--	--
732	0.9	3.0	2.9	9.6	43.8	145.	37.2	124.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.84 (0.05)	8.4	0.37	3.7	0.30	3.0
21	0.85 (0.04)	8.4	--	--	--	--
151	0.90 (0.05)	8.4	--	--	--	--
242	1.26 (0.18)	10.6	--	--	--	--
364	1.78 (0.18)	10.6	1.27	7.6	--	--
536	1.56 (0.15)	8.6	--	--	--	--
732	1.62 (0.08)	5.4	1.45	4.5	0.57	1.9

Table 38. Mass loss and organic-chemical changes during decomposition of white pine needles incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	16.2	162.0	16.6	166.0	32.8	328.0
801124	21	99.3 (1.2)	18.5	184.	16.2	161.	34.7	345.
801222	49	99.3 (0.8)	18.3	182.	16.1	160.	34.4	342.
810403	151	96.2 (0.7)	16.3	157.	14.0	135.	30.3	291.
810605	214	92.3 (2.0)	16.1	149.	9.9	91.4	26.0	240.
810703	242	86.5 (2.0)	12.8	111.	10.4	90.0	23.2	201.
810731	270	79.1 (1.6)	10.0	79.1	12.2	96.5	22.2	176.
810905	306	71.9 (2.1)	12.3	88.4	9.7	69.7	22.0	158.
811102	364	64.1 (4.3)	8.7	55.8	11.0	70.5	19.7	126.
820423	536	56.9 (5.54)	6.2	35.3	10.1	57.5	16.3	92.7
820682	602	56.7 (6.1)	6.3	35.7	9.5	53.9	15.8	89.6
821105	732	46.8 (3.7)	3.8	17.8	9.9	46.3	13.7	64.1

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	4.3	43.0	5.7	57.0	44.7	447.0	22.5	225.0
21	4.2	41.7	5.6	55.6	41.6	413.	23.7	235.
49	2.9	28.7	5.3	52.6	41.8	415.	23.8	236.
151	1.2	11.5	2.4	23.1	44.5	428.	25.2	242.
214	1.1	10.2	3.0	27.7	46.7	431.	27.3	252.
242	1.0	8.7	2.9	25.1	47.2	408.	29.6	256.
270	1.3	10.3	3.9	30.8	45.5	360.	32.3	255.
306	0.5	3.6	2.3	16.5	45.0	324.	33.0	237.
364	1.1	7.1	3.9	25.0	46.2	296.	34.1	219.
536	0.8	4.6	2.8	15.9	47.1	268.	36.6	208.
602	0.6	3.4	2.2	12.5	46.1	261.	38.1	216.
732	1.3	6.1	3.3	15.4	46.8	219.	39.5	185.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.44 (0.01)	4.4	0.22	2.2	0.22	2.2
21	0.48 (0.007)	4.8	0.34	3.4	0.24	2.4
49	0.50 (0.02)	5.0	0.37	3.7	0.26	2.6
151	0.52 (0.04)	5.0	0.41	3.9	0.21	2.0
214	0.58 (0.008)	5.4	0.46	4.2	0.25	2.3
242	0.60 (0.03)	5.2	0.52	3.7	0.44	3.2
270	0.71 (0.008)	5.6	0.48	3.8	0.32	2.5
306	0.72 (0.02)	5.2	0.52	3.7	0.44	3.2
364	0.85 (0.09)	5.4	0.74	4.7	0.46	2.9
536	1.06 (0.13)	6.0	0.83	4.7	0.31	1.8
602	1.00 (0.06)	5.7	--	--	0.29	1.6
732	1.17 (0.12)	5.5	0.74	3.5	0.26	1.2

Table 39. Mass loss and organic-chemical changes during decomposition of white pine needles incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	16.2	162.0	16.6	166.0	32.8	328.0
801124	21	98.8 (0.3)	19.0	188.	16.1	159.	35.1	347.
810403	151	91.7 (1.2)	17.0	156.	8.9	81.6	25.9	238.
810703	242	80.9 (4.3)	12.4	100.	9.7	78.5	22.1	179.
811102	364	64.5 (2.7)	6.5	41.9	9.1	58.7	15.6	101.
820423	536	61.1 (6.8)	5.4	33.0	6.5	39.7	11.9	72.7
821105	732	48.2 (2.5)	5.0	24.1	13.3	64.1	18.3	88.2

DAYS INCUBATED	SOLUBLE PHENOLS		CARB		ACID SOLUBLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	4.3	43.0	5.7	57.0	44.7	447.0	22.5	225.0
21	2.7	26.7	4.9	48.4	--	--	--	--
151	1.3	11.9	3.3	30.3	--	--	--	--
242	1.3	10.5	1.9	15.4	--	--	--	--
364	0.9	5.8	3.9	25.2	--	--	--	--
536	0.6	3.7	1.8	11.0	--	--	--	--
732	1.8	8.7	2.6	12.5	40.7	196.	41.0	198.

DAYS INCUBATED	NITROGEN TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.44 (0.01)	4.4	0.22	2.2	0.22	2.2
21	0.47 (0.01)	4.6	--	--	--	--
151	0.54 (0.4)	5.0	--	--	--	--
242	0.74 (0.09)	6.0	0.70	5.7	--	--
364	0.94 (0.14)	6.1	0.93	6.0	--	--
536	1.12 (0.04)	6.8	--	--	--	--
732	1.46 (0.16)	7.0	1.27	6.1	0.56	2.7

Table 40. Mass loss and organic-chemical changes during decomposition of white pine needles incubated in coarse-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	16.2	162.0	16.6	166.0	32.8	328.0
801124	21	96.2 (5.8)	19.1	184.	19.8	190.	38.9	374.
810403	151	94.7 (0.7)	18.4	174.	14.0	133.	32.4	307.
810703	242	82.9 (4.5)	13.4	111.	10.6	87.9	24.0	199.
811102	364	62.6 (2.0)	8.1	50.7	10.3	64.5	18.4	115.
820423	536	62.5 (3.7)	5.5	23.1	8.4	52.5	13.9	86.9
821105	732	48.0 (5.9)	6.3	30.2	14.3	68.6	20.6	98.9

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	4.3	43.0	5.7	57.0	44.7	447.0	22.5	225.0
21	4.0	38.5	6.6	63.5	--	--	--	--
151	2.6	24.6	3.6	34.1	--	--	--	--
242	1.6	13.3	3.5	29.0	--	--	--	--
364	1.0	6.3	2.9	18.2	--	--	--	--
536	0.6	3.8	2.3	14.4	--	--	--	--
732	0.8	3.8	2.6	12.5	40.0	192.	39.4	189.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.44 (0.01)	4.4	0.22	2.2	0.22	2.2
21	0.45 (0.06)	4.3	--	--	--	--
151	0.49 (0.02)	4.6	--	--	--	--
242	0.66 (0.04)	5.5	0.58	4.8	--	--
364	1.09 (0.10)	6.8	0.90	5.6	--	--
536	1.21 (0.05)	7.6	--	--	--	--
732	1.31 (0.14)	6.3	1.08	5.2	0.53	2.5

Table 41. Mass loss and organic-chemical changes during decomposition of white pine needles incubated in fine-mesh litter bags on the forest floor of the white pine stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	16.2	162.0	16.6	166.0	32.8	328.0
801124	21	99.0 (0.6)	18.7	185.	18.8	186.	37.5	371.
810403	151	95.5 (0.7)	19.5	186.	12.8	122.	32.3	308.
810703	242	80.3 (1.5)	10.5	84.3	15.2	122.	25.7	206.
811102	364	56.2 (4.3)	8.5	47.8	11.9	66.9	20.4	115.
820423	536	53.6 (4.0)	6.8	36.4	15.3	82.0	22.1	118.
821105	732	32.5 (5.0)	4.6	15.0	12.0	39.0	16.6	54.0

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	4.3	43.0	5.7	57.0	44.7	447.0	22.5	225.0
21	3.4	34.7	6.5	64.4	--	--	--	--
151	1.8	17.2	3.4	32.5	--	--	--	--
242	1.5	12.0	4.1	32.9	--	--	--	--
364	1.1	6.2	4.6	25.8	42.8	241.	36.8	207.
536	0.8	4.3	3.3	17.7	--	--	--	--
732	0.8	2.6	3.3	10.7	44.2	144.	39.2	127.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.44 (0.01)	4.4	0.22	2.2	0.22	2.2
21	0.52 (0.01)	5.1	--	--	--	--
151	0.54 (0.03)	5.2	--	--	--	--
242	0.65 (0.04)	5.2	--	--	--	--
364	0.87 (0.15)	4.9	0.84	4.7	--	--
536	1.07 (0.07)	5.7	--	--	--	--
732	1.36 (0.06)	4.4	1.14	3.7	0.44	1.4

Table 42. Mass loss and organic-chemical changes during decomposition of white pine needles incubated in fine-mesh litter bags in the mineral soil of the white pine stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	16.2	162.0	16.6	166.0	32.8	328.0
801124	21	98.7 (5.2)	18.9	186.	18.4	182.	37.3	368.
810403	151	93.4 (2.0)	18.6	173.	12.2	114.	30.8	288.
810703	242	78.6 (1.9)	14.6	115.	12.2	95.9	26.8	211.
811102	364	54.4 (4.7)	9.1	49.5	10.8	58.8	19.9	108.
820423	536	52.4 (4.3)	5.4	28.3	9.6	50.3	15.1	79.1
821105	732	33.8 (9.9)	7.5	25.4	11.1	37.5	18.6	62.9

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	4.3	43.0	5.7	57.0	44.7	447.0	22.5	225.0
21	4.5	44.4	7.1	70.1	--	--	--	--
151	2.6	24.2	3.8	35.5	--	--	--	--
242	1.2	9.4	3.1	24.4	--	--	--	--
364	0.9	4.9	4.0	21.8	--	--	--	--
536	0.9	4.7	2.4	12.6	--	--	--	--
732	0.7	2.4	3.3	11.2	42.8	145.	38.6	130.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.44 (0.01)	4.4	0.22	2.2	0.22	2.2
21	0.44 (0.03)	4.3	--	--	--	--
151	0.54 (0.02)	5.0	--	--	--	--
242	0.72 (0.08)	5.7	--	--	--	--
364	1.08 (0.18)	5.9	0.81	4.4	--	--
536	1.11 (0.09)	5.8	--	--	--	--
732	1.38 (0.05)	4.7	1.06	3.6	0.42	1.4

Table 43. Mass loss and organic-chemical changes during decomposition of white pine needles incubated in coarse-mesh litter bags on the forest floor of the white pine stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	16.2	162.0	16.6	166.0	32.8	328.0
801124	21	97.7 (2.9)	19.2	188.	17.2	168.	36.4	356.
810403	151	94.3 (2.4)	17.6	166.	10.6	100.	28.2	266.
810703	242	85.5 (0.6)	13.6	116.	10.9	93.2	24.5	209.
811102	364	55.7 (4.1)	10.7	59.6	12.6	70.2	23.3	130.
820423	536	55.3 (4.3)	7.2	39.8	8.7	48.1	15.9	87.9
821105	732	37.4 (5.5)	7.7	28.8	12.6	47.1	20.3	75.9

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	4.3	43.0	5.7	57.0	44.7	447.0	22.5	225.0
21	3.7	36.1	6.1	59.6	--	--	--	--
151	1.9	17.9	3.9	36.8	--	--	--	--
242	1.6	13.7	4.1	35.1	--	--	--	--
364	0.9	5.0	4.8	26.7	--	--	--	--
536	0.5	2.8	2.4	13.3	--	--	--	--
732	0.8	3.0	3.3	12.3	45.1	169.	34.6	129.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.44 (0.01)	4.4	0.22	2.2	0.22	2.2
21	0.47 (0.04)	4.6	--	--	--	--
151	0.60 (0.06)	5.7	--	--	--	--
242	0.62 (0.05)	5.3	--	--	--	--
364	1.09 (0.28)	6.1	0.84	4.7	--	--
536	1.18 (0.03)	6.5	--	--	--	--
732	1.29 (0.04)	4.8	1.09	4.1	0.39	1.5

Table 44. Mass loss and organic-chemical changes during decomposition of hemlock needles incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)		EXTRACTIVES					
				NON-POLAR		POLAR		TOTAL	
				REL	ABS	REL	ABS	REL	ABS
801103	0	100.0	--	17.7	177.0	18.1	181.0	35.8	358.
801124	21	98.8	(1.3)	17.8	176.	21.7	214.	39.5	390.
801222	49	89.9	(0.7)	18.0	162.	17.6	158.	35.6	320.
810403	151	90.8	(0.5)	19.2	174.	17.2	156.	36.4	331.
810605	214	88.6	(0.8)	18.9	167.	15.9	141.	34.8	308.
810703	242	82.2	(3.1)	18.2	150.	12.9	106.	31.1	256.
810731	270	79.1	(1.7)	17.2	136.	11.4	90.2	28.6	226.
810905	306	77.8	(0.7)	16.6	129.	11.1	86.4	27.7	216.
811102	364	69.7	(4.5)	9.3	64.8	11.3	78.8	20.6	206.
820423	536	66.4	(1.3)	8.4	55.8	15.7	104.	24.1	160.
820682	602	58.3	(3.6)	6.6	38.5	10.1	58.9	16.7	97.4
821105	732	54.9	(5.3)	6.6	36.2	9.7	53.3	16.3	89.5

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	3.1	31.0	5.9	59.0	39.6	396.0	20.6	206.0
21	3.2	31.6	7.7	76.1	38.6	381.	21.9	216.
49	3.6	32.4	6.1	54.8	39.7	357.	24.7	222.
151	2.8	25.4	4.9	44.5	38.9	353.	24.7	224.
214	2.4	21.3	4.9	43.4	38.9	345.	26.3	233.
242	1.9	15.5	3.3	27.1	39.2	322.	29.7	244.
270	2.2	17.4	3.8	30.1	38.7	306.	32.7	259.
306	1.4	10.9	2.5	19.5	38.0	295.	34.3	267.
364	1.4	9.8	2.8	19.5	42.8	298.	36.6	255.
536	1.5	10.0	3.2	21.2	41.4	275.	34.5	229.
602	1.0	5.8	1.9	11.1	43.6	254.	39.7	232.
732	1.1	6.0	2.8	15.4	42.6	234.	41.1	226.

DAYS INCUBATED	NITROGEN						
	TOTAL LITTER			NON-EXTRACTABLE		ACID INSOLUBLE	
	REL		ABS	REL	ABS	REL	ABS
0	0.83	(0.05)	8.3	0.38	3.8	0.23	2.3
21	0.93	(0.03)	9.2	0.64	6.3	0.25	2.5
49	1.01	(0.05)	9.1	0.56	5.0	0.24	2.2
151	1.02	(0.01)	9.3	0.73	6.6	0.24	2.2
214	1.02	(0.02)	9.0	0.70	6.2	0.25	2.2
242	1.13	(0.09)	9.3	0.76	6.2	0.32	2.6
270	1.31	(0.06)	10.4	0.94	7.4	0.44	3.5
306	1.28	(0.05)	10.0	0.90	7.0	0.36	2.8
364	1.47	(0.10)	10.2	1.10	7.7	0.48	3.3
536	1.52	(0.09)	10.1	1.17	7.8	0.45	3.0
602	1.72	(0.26)	10.0	--	--	0.46	2.7
732	2.18	(0.22)	12.0	1.82	10.0	0.46	4.7

Table 45. Mass loss and organic-chemical changes during decomposition of hemlock needles incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	17.7	177.0	18.1	181.0	35.8	358.
801124	21	97.1 (1.3)	14.7	143.	22.0	214.	36.7	356.
810403	151	86.8 (2.9)	17.5	152.	15.3	133.	32.8	284.
810703	242	79.3 (5.3)	14.0	111.	10.6	84.1	24.6	195.
811102	364	70.3 (7.2)	6.1	42.9	8.7	61.2	14.8	104.
820423	536	62.8 (1.5)	6.6	41.4	9.3	58.4	15.9	99.9
821105	732	45.1 (0.7)	5.4	24.4	7.5	33.8	12.9	58.2

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	3.1	31.0	5.9	59.0	39.6	396.0	20.6	206.0
21	3.5	34.0	8.0	77.7	--	--	--	--
151	2.6	22.6	4.7	40.8	--	--	--	--
242	1.4	11.1	2.8	22.2	--	--	--	--
364	0.8	5.6	2.0	14.1	--	--	--	--
536	2.1	13.2	2.2	13.8	--	--	--	--
732	1.1	5.0	3.0	13.5	41.9	189.	45.2	204.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.38	3.8	0.23	2.3
21	0.92 (0.007)	8.9	--	--	--	--
151	1.00 (0.06)	8.7	--	--	--	--
242	1.22 (0.05)	9.7	--	--	--	--
364	1.62 (0.12)	11.4	1.40	9.8	--	--
536	1.69 (0.17)	10.6	--	--	--	--
732	1.73 (0.20)	7.8	1.47	6.6	0.61	2.8

Table 46. Mass loss and organic-chemical changes during decomposition of hemlock needles incubated in fine-mesh litter bags on the forest floor of the hemlock stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	17.7	177.0	18.1	181.0	35.8	358.
801124	21	97.0 (1.8)	14.8	144.	21.5	209.	36.3	352.
810403	151	89.7 (1.9)	19.3	173.	19.4	174.	38.7	347.
810703	242	81.4 (0.4)	16.0	130.	12.3	100.	28.3	230.
811102	364	68.4 (1.5)	9.5	65.0	11.2	77.3	20.8	142.
820423	536	65.8 (1.7)	6.9	45.4	10.0	65.8	16.9	111.
821105	732	47.5 (5.4)	6.8	32.3	14.1	67.0	20.9	99.3

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	3.1	31.0	5.9	59.0	39.6	396.0	20.6	206.0
21	3.4	33.0	7.2	69.8	--	--	--	--
151	3.5	31.4	6.8	61.0	--	--	--	--
242	2.5	20.4	3.5	28.5	--	--	--	--
364	1.7	20.4	3.3	22.6	--	--	--	--
536	2.0	13.2	3.0	19.7	--	--	--	--
732	2.2	10.5	4.2	20.0	41.4	197.	37.7	179.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.38	3.8	0.23	2.3
21	1.06 (0.04)	10.3	--	--	--	--
151	1.12 (0.11)	10.0	--	--	--	--
242	1.30 (0.10)	10.6	--	--	--	--
364	1.36 (0.11)	9.3	1.09	7.5	--	--
536	1.47 (0.05)	9.7	--	--	--	--
732	1.56 (0.17)	7.4	1.11	5.3	0.48	2.3

Table 47. Mass loss and organic-chemical changes during decomposition of hemlock needles incubated in fine-mesh litter bags in the mineral soil of the hemlock stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	17.7	177.0	18.1	181.0	35.8	358.
801124	21	96.7 (1.2)	16.5	160.	17.5	169.	34.0	329.
810403	151	84.1 (0.8)	18.4	155.	13.8	116.	32.2	271.
810703	242	77.4 (0.9)	14.3	111.	11.9	92.1	26.2	203.
811102	364	65.1 (1.9)	8.2	53.3	10.9	71.0	19.1	124.
820423	536	60.7 (4.2)	8.4	51.1	10.9	66.3	19.3	117.
821105	732	51.4 (6.4)	5.2	26.7	13.1	67.3	18.3	94.1

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	3.1	31.0	5.9	59.0	39.6	396.0	20.6	206.0
21	3.5	33.8	7.4	71.6	--	--	--	--
151	2.4	20.2	4.9	41.2	--	--	--	--
242	2.3	17.8	3.0	23.2	--	--	--	--
364	1.3	8.5	2.9	18.9	--	--	--	--
536	2.1	12.8	3.7	22.5	--	--	--	--
732	1.8	9.3	5.1	26.2	41.8	215.	39.9	205.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.83 (0.05)	8.3	0.38	3.8	0.23	2.3
21	0.99 (0.06)	9.6	--	--	--	--
151	1.09 (0.05)	9.2	--	--	--	--
242	1.31 (0.13)	10.1	--	--	--	--
364	1.53 (0.13)	10.0	1.18	7.7	--	--
536	1.59 (0.25)	9.7	--	--	--	--
732	1.61 (0.18)	8.3	1.31	6.7	0.66	3.4

Table 48. Mass loss and organic-chemical changes during decomposition of red oak leaves incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	9.0	90.0	21.0	210.0	30.0	300.0
801124	21	98.7 (0.7)	11.4	113.	20.7	204.	32.2	318.
801222	49	96.1 (0.5)	9.7	93.2	16.5	159.	26.2	252.
810403	151	92.8 (1.7)	11.1	103.	9.6	89.1	20.7	192.
810605	214	87.6 (2.8)	10.3	90.2	10.8	94.6	21.1	185.
810703	242	80.5 (1.2)	7.0	56.4	10.5	84.5	17.5	141.
810731	270	77.2 (2.9)	4.6	35.5	10.3	79.5	14.9	115.
810905	306	67.4 (2.6)	7.8	52.6	7.4	49.9	15.2	102.
811102	364	59.2 (5.0)	4.7	27.8	9.2	54.5	13.9	82.3
820423	536	56.9 (2.7)	3.8	21.6	11.6	66.0	15.4	87.6
820682	602	53.3 (0.6)	4.4	23.5	10.8	57.6	15.2	81.0
821105	732	45.4 (3.9)	3.3	15.0	12.2	55.4	15.5	70.4

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	2.7	27.0	6.9	69.0	45.2	452.0	24.8	248.0
21	3.4	33.6	6.5	64.2	43.2	426.	24.6	243.
49	2.9	27.9	5.3	50.9	46.1	443.	27.7	266.
151	1.6	14.8	3.3	30.6	50.0	464.	29.3	272.
214	2.0	17.5	3.3	28.9	46.8	410.	32.1	281.
242	1.5	12.1	3.0	24.2	50.4	406.	32.1	258.
270	1.5	11.6	2.6	20.1	51.6	398.	32.5	259.
306	0.9	6.1	1.9	12.8	48.0	324.	36.8	248.
364	0.9	5.3	2.3	13.6	46.5	275.	39.6	234.
536	1.1	6.3	2.4	13.7	45.5	259.	39.1	223.
602	0.9	4.8	2.4	12.8	45.7	244.	39.1	208.
732	1.3	5.9	1.8	8.2	37.6	171.	46.9	213.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.82 (0.03)	8.2	0.41	4.1	0.24	2.4
21	0.99 (0.11)	9.8	0.85	8.4	0.32	3.2
49	1.01 (0.14)	9.7	0.86	8.3	0.36	3.5
151	1.16 (0.15)	10.8	0.92	8.5	0.32	3.0
214	1.25 (0.08)	11.0	1.02	8.9	0.30	2.6
242	1.49 (0.16)	12.0	0.99	8.0	0.44	3.5
270	1.48 (0.06)	11.4	1.26	9.7	0.42	3.2
306	1.65 (0.11)	11.1	1.35	9.1	0.47	3.2
364	1.98 (0.05)	11.7	1.49	8.8	0.44	2.6
536	1.86 (0.06)	10.6	1.35	7.7	0.44	2.5
602	2.09 (0.18)	11.1	--	--	0.48	2.6
732	1.81 (0.11)	8.2	1.56	7.1	0.89	4.1

Table 49. Mass loss and organic-chemical changes during decomposition of red oak leaves incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	9.0	90.0	21.0	210.0	30.0	300.0
801124	21	97.6 (0.3)	10.4	102.	16.2	158.	26.6	260.
810403	151	88.7 (3.8)	12.6	112.	11.2	99.3	23.8	211.
810703	242	78.7 (1.6)	7.5	59.0	9.2	72.4	16.7	131.
811102	364	56.3 (3.2)	4.1	23.1	9.7	54.6	13.8	77.7
820423	536	59.6 (16.1)	1.4	8.3	10.8	64.4	12.2	72.7
821105	732	38.2 (4.9)	2.1	8.0	13.7	52.3	15.8	60.4

DAYS INCUBATED	SOLUBLE PHENOLS		CARB		ACID SOLUBLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	2.7	27.0	6.9	69.0	45.2	452.0	24.8	248.0
21	2.6	25.3	5.7	55.6	--	--	--	--
151	1.7	15.1	3.8	33.7	--	--	--	--
242	1.1	8.7	1.9	15.0	--	--	--	--
364	1.0	5.6	2.7	15.2	--	--	--	--
536	0.7	4.2	2.2	13.1	--	--	--	--
732	0.9	3.4	2.5	9.6	39.6	151.	44.6	170.

DAYS INCUBATED	NITROGEN TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.82 (0.03)	8.2	0.41	4.1	0.24	2.4
21	0.96 (0.02)	9.4	--	--	--	--
151	1.12 (0.27)	9.9	--	--	--	--
242	1.49 (0.16)	11.7	--	--	--	--
364	1.99 (0.14)	11.2	1.72	9.7	--	--
536	1.82 (0.19)	10.8	--	--	--	--
732	2.05 (0.13)	7.8	1.73	6.6	0.97	3.7

Table 50. Mass loss and organic-chemical changes during decomposition of red oak leaves incubated in coarse-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	9.0	90.0	21.0	210.0	30.0	300.0
801124	21	98.2 (0.3)	9.6	94.3	20.8	204.	30.4	299.
810403	151	94.6 (2.0)	11.5	109.	17.1	162.	28.6	271.
810703	242	83.9 (4.0)	8.3	69.6	10.6	88.9	18.9	159.
811102	364	66.7 (3.8)	4.0	26.7	10.4	69.4	14.4	96.0
820423	536	63.8 (7.0)	2.8	17.9	14.2	90.6	17.0	108.
821105	732	43.9 (4.7)	2.8	12.3	12.6	55.3	15.4	67.6

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	2.7	27.0	6.9	69.0	45.2	452.0	24.8	248.0
21	3.4	33.3	7.0	68.7	--	--	--	--
151	3.0	28.4	5.6	53.0	--	--	--	--
242	2.0	16.8	2.9	24.3	--	--	--	--
364	0.8	5.3	2.4	16.0	--	--	--	--
536	0.8	5.1	2.1	13.4	--	--	--	--
732	1.1	4.8	2.7	11.9	38.7	170.	45.9	202.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.82 (0.03)	8.2	0.41	4.1	0.24	2.4
21	0.97 (0.07)	9.5	--	--	--	--
151	0.90 (0.21)	8.5	--	--	--	--
242	1.41 (0.20)	11.8	--	--	--	--
364	1.87 (0.16)	12.5	1.55	10.3	--	--
536	1.96 (0.08)	12.5	--	--	--	--
732	1.92 (0.11)	8.4	1.70	7.5	0.82	3.6

Table 51. Mass loss and organic-chemical changes during decomposition of hemlock bark incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	9.1	91.0	11.7	117.0	20.8	280.0
801124	21	98.8 (1.5)	10.7	106.	10.0	98.8	20.7	205.
801222	49	98.0 (0.5)	11.1	109.	11.2	110.	22.3	219.
810403	151	97.7 (1.7)	10.3	101.	12.7	124.	23.0	225.
810605	214	97.9 (1.0)	6.7	65.6	14.2	139.	20.9	205.
810703	242	97.9 (1.1)	8.1	79.3	14.8	145.	22.9	224.
810731	270	96.9 (1.5)	9.9	95.9	12.4	120.	22.3	216.
810905	306	94.8 (0.2)	7.5	71.1	10.1	95.7	17.6	167.
811102	364	95.1 (2.3)	8.5	80.8	10.3	98.0	18.8	179.
820423	536	94.2 (0.8)	5.3	49.9	10.3	97.0	15.6	147.
820682	602	89.4 (4.5)	4.4	39.3	14.7	131.	19.1	171.
821105	732	90.6 (1.3)	7.1	64.3	11.0	100.	18.1	164.

DAYS INCUBATED	SOLUBLE PHENOLS		CARB		ACID SOLUBLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	5.4	54.0	4.1	41.0	40.3	403.0	38.9	389.0
21	4.6	45.4	2.6	25.7	35.6	352.	43.7	432.
49	5.3	51.9	3.6	35.3	34.4	337.	43.3	424.
151	5.2	50.8	4.2	41.0	36.4	356.	40.6	397.
214	7.6	74.4	4.7	46.0	39.6	387.	39.5	387.
242	4.0	39.2	3.4	33.3	37.1	363.	40.0	392.
270	5.8	56.2	4.2	40.7	35.3	342.	42.4	411.
306	3.5	33.2	3.0	28.4	39.8	377.	42.6	404.
364	3.3	31.3	4.9	46.6	38.9	370.	42.3	402.
536	4.9	46.2	5.2	49.0	41.6	392.	42.8	403.
602	6.4	57.2	3.4	30.4	39.8	356.	41.1	367.
732	4.2	38.1	3.1	28.1	38.7	351.	43.2	391.

DAYS INCUBATED	NITROGEN TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.30 (0.02)	3.0	0.20	2.0	0.14	1.4
21	0.27 (0.02)	2.7	0.27	2.7	0.21	2.1
49	0.27 (0.06	2.6	0.27	2.6	0.25	2.5
151	0.34 (0.03)	3.3	0.34	3.3	0.18	1.8
214	0.39 (0.02)	3.8	0.33	3.2	0.23	2.3
242	0.35 (0.02)	3.4	0.35	3.4	0.24	2.3
270	0.29 (0.01)	2.8	0.29	2.8	0.24	2.3
306	0.35 (0.01)	3.3	0.35	3.3	0.20	1.9
364	0.32 (0.03)	3.0	0.32	3.0	0.25	2.4
536	0.44 (0.06)	4.1	0.25	2.4	0.24	2.3
602	0.45 (0.09)	4.0	--	--	0.15	1.3
732	0.44 (0.09)	4.0	0.41	3.7	0.16	1.4

Table 52. Mass loss and organic-chemical changes during decomposition of hemlock bark incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	9.1	91.0	11.7	117.0	20.8	280.0
801124	21	98.6 (0.8)	9.0	88.7	18.6	183.	27.6	272.
810403	151	97.5 (1.0)	10.7	104.	14.5	141.	25.2	246.
810703	242	96.8 (1.3)	7.3	70.7	13.9	135.	21.2	205.
811102	364	94.3 (1.4)	10.2	96.2	12.1	114.	22.3	210.
820423	536	93.2 (2.9)	3.5	32.6	9.5	88.5	13.0	121.
821105	732	85.4 (4.2)	7.1	60.6	11.3	96.5	18.4	157.

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	5.4	54.0	4.1	41.0	40.3	403.0	38.9	389.0
21	6.5	64.1	6.3	62.1	--	--	--	--
151	6.1	59.5	5.4	52.7	--	--	--	--
242	8.4	81.3	4.0	38.7	--	--	--	--
364	3.1	29.2	3.5	33.0	--	--	--	--
536	4.1	38.2	3.1	28.9	--	--	--	--
732	4.6	39.3	3.5	29.9	37.9	324.	43.7	373.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.30 (0.02)	3.0	0.20	2.0	0.14	1.4
21	0.27 (0.05)	2.7	--	--	--	--
151	0.35 (0.03)	3.4	--	--	--	--
242	0.39 (0.12)	3.8	--	--	--	--
364	0.36 (0.06)	3.4	0.36	3.4	--	--
536	0.43 (0.04)	4.0	--	--	--	--
732	0.44 (0.09)	3.8	0.36	3.1	0.20	1.7

Table 53. Mass loss and organic-chemical changes during decomposition of hemlock bark incubated in coarse-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES NON-POLAR		EXTRACTIVES POLAR		EXTRACTIVES TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	9.1	91.0	11.7	117.0	20.8	280.0
801124	21	97.3 (0.7)	9.9	96.3	17.7	172.	27.6	269.
810403	151	98.1 (0.8)	9.9	97.1	15.1	148.	25.0	245.
810703	242	97.4 (0.4)	8.8	85.7	16.6	162.	25.4	247.
811102	364	94.3 (1.2)	12.0	113.	14.6	138.	26.6	251.
820423	536	93.3 (1.4)	5.7	53.2	13.1	122.	18.8	175.
821105	732	88.0 (4.6)	6.1	53.7	13.1	115.	19.2	169.

DAYS INCUBATED	SOLUBLE PHENOLS		SOLUBLE CARB		ACID SOLUBLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	5.4	54.0	4.1	41.0	40.3	403.0	38.9	389.0
21	6.3	61.3	6.4	62.2	--	--	--	--
151	6.3	61.8	5.0	49.1	--	--	--	--
242	8.8	85.7	5.0	48.7	--	--	--	--
364	3.4	32.1	4.5	42.4	--	--	--	--
536	4.3	40.1	3.1	28.9	--	--	--	--
732	4.4	38.7	3.9	34.3	39.1	344.	41.7	367.

DAYS INCUBATED	NITROGEN TOTAL LITTER		NITROGEN NON-EXTRACTABLE		NITROGEN ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.30 (0.02)	3.0	0.20	2.0	0.14	1.4
21	0.24 (0.05)	2.3	--	--	--	--
151	0.37 (0.07)	3.6	--	--	--	--
242	0.39 (0.03	3.8	--	--	--	--
364	0.33 (0.03)	3.1	0.33	3.1	--	--
536	0.49 (0.03)	4.6	--	--	--	--
732	0.62 (0.12)	5.5	0.44	3.9	0.18	1.6

Table 54. Mass loss and organic-chemical changes during decomposition of red maple bark incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	5.4	54.0	13.2	132.0	18.6	186.0
801124	21	96.4 (1.4)	2.9	28.0	13.1	126.	16.0	154.
801222	49	94.4 (0.9)	4.5	42.5	8.0	75.5	12.5	118.
810403	151	91.2 (1.0)	6.5	59.2	6.6	60.2	13.1	119.
810605	214	89.2 (2.3)	2.2	19.6	6.7	59.8	8.9	79.4
810703	242	84.6 (1.4)	2.1	17.8	7.7	65.1	9.8	82.9
810731	270	79.7 (3.7)	5.2	41.4	7.5	59.8	12.9	103.
810905	306	74.8 (1.4)	3.3	24.7	5.6	41.9	8.9	66.6
811102	364	61.4 (9.2)	6.1	37.5	7.3	44.8	13.4	82.3
820423	536	64.1 (10.7)	1.0	6.4	7.3	46.8	8.3	53.2
820682	602	63.1 (1.4)	2.3	14.5	8.4	53.0	10.7	67.5
821105	732	40.5 (3.2)	3.2	13.0	9.9	40.1	13.1	53.1

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	5.6	56.0	3.0	30.0	64.6	646.0	16.8	168.0
21	4.1	39.5	3.7	35.7	64.6	623.	18.9	182.
49	2.3	21.7	2.3	21.7	64.9	613.	22.6	213.
151	2.0	18.2	2.1	19.2	67.0	611.	19.9	181.
214	1.5	13.4	2.0	17.8	69.2	617.	21.9	195.
242	1.5	12.7	3.0	25.4	64.9	549.	25.3	214.
270	0.9	7.2	2.3	18.3	62.1	495.	25.0	199.
306	0.6	4.5	1.4	10.5	62.0	464.	29.1	218.
364	0.8	4.9	1.8	11.1	57.8	355.	28.8	177.
536	0.6	3.8	1.7	10.9	65.9	422.	25.8	165.
602	0.7	4.4	1.9	12.0	62.6	395.	26.7	168.
732	0.9	3.6	2.1	8.5	51.0	207.	35.9	145.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.45 (0.01)	4.5	0.22	2.2	0.16	1.6
21	0.45 (0.01)	4.3	0.28	2.7	0.19	1.8
49	0.45 (0.01)	4.2	0.42	4.0	0.26	2.5
151	0.57 (0.12)	5.2	0.43	3.9	0.23	2.1
214	0.57 (0.06)	5.1	0.51	4.5	0.25	2.2
242	0.67 (0.10)	5.7	0.61	5.2	0.26	2.2
270	0.70 (0.03)	5.6	0.57	4.5	0.31	2.5
306	0.82 (0.09)	6.1	0.68	5.1	0.33	2.5
364	1.03 (0.33)	6.3	0.88	5.4	0.43	2.6
536	1.20 (0.30)	7.7	0.92	5.9	0.42	2.7
602	1.01 (0.08)	6.4	--	--	0.31	2.0
732	1.38 (0.16)	5.6	1.20	4.9	0.47	1.9

Table 55. Mass loss and organic-chemical changes during decomposition of red maple bark incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	5.4	54.0	13.2	132.0	18.6	186.0
801124	21	97.9 (1.2)	6.9	67.6	10.2	99.9	17.1	167.
810403	151	87.0 (2.7)	7.1	61.8	7.8	67.9	14.9	130.
810703	242	73.2 (2.3)	4.8	35.1	6.7	49.0	11.5	84.2
811102	364	63.6 (4.0)	7.2	45.8	4.8	30.5	12.0	76.3
820423	536	50.8 (4.7)	2.0	10.2	6.1	31.0	8.1	41.1
821105	732	31.5 (6.2)	2.7	8.5	9.7	30.6	12.4	39.1

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	5.6	56.0	3.0	30.0	64.6	646.0	16.8	168.0
21	2.4	23.4	3.4	33.3	--	--	--	--
151	1.7	14.8	2.1	18.3	--	--	--	--
242	0.7	5.1	1.9	13.9	--	--	--	--
364	0.6	3.8	1.8	11.4	--	--	--	--
536	0.7	3.6	1.3	6.6	--	--	--	--
732	0.7	2.2	1.9	6.0	47.2	149.	40.4	127.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.45 (0.01)	4.5	0.22	2.2	0.16	1.6
21	0.48 (0.01)	4.7	--	--	--	--
151	0.57 (0.10)	5.0	--	--	--	--
242	0.67 (0.08)	4.9	0.59	4.3	--	--
364	1.12 (0.09)	7.1	0.83	5.3	--	--
536	1.33 (0.17)	6.8	--	--	--	--
732	1.65 (0.17)	5.2	1.43	4.5	0.59	1.9

Table 56. Mass loss and organic-chemical changes during decomposition of red maple bark incubated in coarse-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	5.4	54.0	13.2	132.0	18.6	186.0
801124	21	94.1 (1.2)	5.3	49.9	11.5	108.	16.8	158.
810403	151	88.9 (7.0)	7.3	64.9	8.5	75.6	15.8	140.
810703	242	84.7 (2.9)	4.1	34.7	6.8	57.6	10.9	92.3
811102	364	62.3 (7.3)	6.9	43.0	7.3	45.5	14.5	88.5
820423	536	50.9 (5.1)	1.9	9.7	7.7	39.1	9.6	48.9
821105	732	337.1 (1.8)	2.7	10.0	9.6	35.6	12.3	45.6

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	5.6	56.0	3.0	30.0	64.6	646.0	16.8	168.0
21	3.2	30.1	3.9	36.7	--	--	--	--
151	2.1	18.7	3.4	30.2	--	--	--	--
242	1.4	11.9	2.3	19.5	--	--	--	--
364	0.4	2.5	1.2	7.5	--	--	--	--
536	0.8	4.1	2.0	10.2	--	--	--	--
732	0.8	3.0	2.2	8.2	51.0	189.	36.7	136.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.45 (0.01)	4.5	0.22	2.2	0.16	1.6
21	0.43 (0.04)	4.0	--	--	--	--
151	0.54 (0.01)	4.8	--	--	--	--
242	0.68 (0.19)	5.8	0.59	5.0	--	--
364	1.09 (0.16)	6.8	0.88	5.5	--	--
536	1.49 (0.03)	7.6	--	--	--	--
732	1.69 (0.18)	6.3	1.32	4.9	0.53	2.0

Table 57. Mass loss and organic-chemical changes during decomposition of white pine roots incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES NON-POLAR		EXTRACTIVES POLAR		EXTRACTIVES TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	11.7	117.0	13.5	135.0	25.2	252.0
801124	21	96.9 (0.6)	12.2	118.	10.5	102.	22.7	220.
801222	49	91.3 (1.6)	11.9	109.	6.8	62.1	18.7	171.
810403	151	90.5 (1.3)	13.6	123.	7.0	63.4	20.6	186.
810605	214	85.3 (1.1)	10.5	89.6	5.5	46.9	16.0	136.
810703	242	79.9 (1.8)	8.8	70.3	5.7	45.5	14.5	116.
810731	270	80.1 (1.6)	11.8	94.5	6.8	54.5	18.6	149.
810905	306	78.5 (0.6)	8.9	69.9	5.3	41.6	14.2	111.
811102	364	78.5 (4.3)	5.1	40.0	6.3	49.5	11.4	89.5
820423	536	69.9 (1.4)	4.2	29.4	6.7	46.8	10.9	76.2
820682	602	74.6 (1.0)	4.3	32.1	6.2	46.3	10.5	78.3
821105	732	66.3 (4.1)	1.1	7.3	6.9	45.7	8.0	53.0

DAYS INCUBATED	SOLUBLE PHENOLS		SOLUBLE CARB		ACID SOLUBLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	2.9	29.0	5.2	52.0	49.5	495.0	25.3	253.0
21	1.1	10.7	3.8	36.8	46.1	447.	31.2	302.
49	0.4	3.7	3.5	32.6	47.9	437.	33.4	305.
151	1.2	10.9	2.6	23.5	47.1	426.	32.3	292.
214	0.4	3.4	1.9	16.2	49.5	422.	34.5	294.
242	0.5	4.0	1.8	14.4	49.5	395.	36.0	288.
270	0.8	6.4	2.6	20.8	47.9	384.	33.5	268.
306	0.6	4.7	1.7	13.3	49.1	385.	36.7	288.
364	0.6	4.7	1.3	10.2	47.6	374.	41.0	322.
536	0.8	5.6	1.7	11.9	50.3	352.	38.8	271.
602	0.7	5.2	1.2	9.0	50.6	378.	38.9	290.
732	1.4	9.3	2.4	15.9	47.3	314.	44.7	296.

DAYS INCUBATED	NITROGEN TOTAL LITTER		NITROGEN NON-EXTRACTABLE		NITROGEN ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.93 (0.03)	9.3	0.43	4.3	0.31	3.1
21	0.99 (0.03)	9.6	0.99	9.6	0.41	4.0
49	1.21 (0.01)	11.0	0.87	7.9	0.27	2.5
151	1.25 (0.09)	11.3	0.84	7.6	0.25	2.3
214	1.29 (0.04)	11.0	0.96	8.2	0.31	2.6
242	1.38 (0.10)	11.0	1.13	9.0	0.39	3.1
270	1.40 (0.05)	11.2	1.03	8.3	0.37	3.0
306	1.30 (0.06)	10.2	1.09	8.6	0.42	3.3
364	1.30 (0.06)	10.2	1.13	8.9	0.38	3.0
536	1.42 (0.08)	9.9	1.29	9.0	0.38	2.7
602	1.39 (0.05)	10.4	--	--	0.39	2.9
732	1.33 (0.08)	8.8	1.22	8.1	0.54	3.6

Table 58. Mass loss and organic-chemical changes during decomposition of white pine roots incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	11.7	117.0	13.5	135.0	25.2	252.0
801124	21	96.8 (3.9)	12.6	122.	11.3	109.	23.9	231.
810403	151	84.2 (2.8)	12.3	104.	5.6	47.2	17.9	151.
810703	242	82.3 (3.4)	10.5	86.5	5.8	47.7	16.3	134.
811102	364	70.0 (2.6)	2.9	20.3	6.2	43.4	9.1	63.7
820423	536	65.6 (3.5)	2.5	16.4	3.7	24.2	6.2	40.7
821105	732	57.6 (0.7)	2.0	11.5	9.2	53.0	11.2	64.5

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	2.9	29.0	5.2	52.0	49.5	495.0	25.3	253.0
21	1.2	11.6	4.2	40.7	--	--	--	--
151	0.7	5.9	2.5	21.1	--	--	--	--
242	0.7	5.8	1.8	14.8	--	--	--	--
364	0.5	3.5	1.2	8.4	--	--	--	--
536	0.4	2.6	1.4	9.2	--	--	--	--
732	1.3	7.5	2.4	13.8	40.0	230.	48.8	281.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	0.93 (0.03)	9.3	0.43	4.3	0.31	3.1
21	1.16 (0.06)	11.2	--	--	--	--
151	1.20 (0.08)	10.1	--	--	--	--
242	1.35 (0.05)	11.1	--	--	--	--
364	1.28 (0.07)	9.0	1.08	7.6	--	--
536	1.31 (0.08)	8.6	--	--	--	--
732	1.45 (0.08)	8.4	1.18	6.8	0.56	3.2

Table 59. Mass loss and organic-chemical changes during decomposition of sugar maple roots incubated in fine-mesh litter bags on the forest floor of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	7.9	79.0	10.6	106.0	18.5	185.0
801124	21	96.4 (1.0)	9.8	94.5	3.9	37.6	13.7	132.
801222	49	94.1 (1.8)	10.6	99.7	5.8	54.6	16.4	154.
810403	151	92.2 (1.0)	10.3	95.0	3.6	33.2	13.9	128.
810605	214	91.0 (0.7)	7.8	71.0	3.3	30.0	11.1	101.
810703	242	90.7 (2.4)	5.5	49.9	3.3	29.9	8.8	79.8
810731	270	90.0 (3.2)	10.7	96.3	5.5	49.5	16.2	146.
810905	306	87.7 (1.4)	8.1	71.0	2.9	25.4	11.0	96.5
811102	364	84.6 (2.1)	1.8	15.2	6.4	54.1	8.2	69.4
820423	536	80.8 (1.7)	3.0	24.2	3.7	19.9	6.7	54.1
820682	602	82.4 (1.1)	2.9	23.9	6.2	51.1	9.1	75.0
821105	732	75.0 (4.7)	1.7	12.8	9.7	72.8	11.4	85.5

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	3.5	35.0	3.9	39.0	47.7	477.0	33.8	338.0
21	0.3	2.9	1.2	11.6	45.5	439.	40.8	393.
49	1.2	11.3	2.0	18.8	44.1	415.	39.5	372.
151	1.0	9.2	1.8	16.6	44.8	413.	41.3	381.
214	1.0	9.1	1.3	11.8	46.1	419.	42.8	389.
242	1.0	9.1	1.6	14.5	46.9	425.	44.3	402.
270	0.6	5.4	1.3	11.7	43.9	395.	39.9	359.
306	0.4	3.5	1.1	9.6	45.0	395.	44.0	386.
364	0.6	5.1	1.2	10.2	47.9	405.	43.9	371.
536	0.8	6.5	1.7	13.7	47.9	387.	45.4	367.
602	0.6	4.9	1.2	9.9	47.0	387.	43.9	362.
732	1.3	9.8	2.3	17.3	40.4	303.	48.2	362.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	1.67 (0.13)	16.7	0.52	5.2	0.50	5.0
21	1.89 (0.12)	18.2	1.34	12.9	0.68	6.6
49	1.69 (0.06)	15.9	1.25	11.8	0.40	3.8
151	1.64 (0.03)	15.1	1.30	12.0	0.52	4.8
214	1.78 (0.03)	16.2	1.36	12.4	0.48	4.4
242	1.65 (0.12)	15.0	1.09	9.9	0.58	5.3
270	1.63 (0.05)	14.7	1.46	13.1	0.44	4.0
306	1.58 (0.003)	13.9	1.41	12.4	0.47	4.1
364	1.63 (0.007)	13.8	1.50	12.7	0.44	3.7
536	1.72 (0.10)	13.9	1.34	10.8	0.43	3.5
602	1.79 (0.05)	14.7	--	--	0.51	4.2
732	1.76 (0.05)	13.2	1.45	10.9	0.77	5.8

Table 60. Mass loss and organic-chemical changes during decomposition of sugar maple roots incubated in fine-mesh litter bags in the mineral soil of the sugar maple stand.

DATE	DAYS INCUBATED	% REMAINING (+/- s.d)	EXTRACTIVES					
			NON-POLAR		POLAR		TOTAL	
			REL	ABS	REL	ABS	REL	ABS
801103	0	100.0 --	7.9	79.0	10.6	106.0	18.5	185.0
801124	21	94.3 (0.2)	9.1	85.8	4.5	42.4	13.6	128.
810403	151	91.8 (2.6)	10.2	93.6	3.5	32.1	13.7	126.
810703	242	93.1 (3.0)	7.2	67.0	4.3	40.0	11.5	107.
811102	364	82.8 (1.5)	3.1	25.7	4.8	39.7	7.9	65.4
820423	536	84.4 (4.9)	1.1	9.3	5.5	46.4	6.6	55.7
821105	732	67.6 (2.5)	1.0	6.8	7.6	51.4	8.6	58.1

DAYS INCUBATED	SOLUBLE				ACID SOLUBLE		ACID INSOLUBLE	
	PHENOLS		CARB					
	REL	ABS	REL	ABS	REL	ABS	REL	ABS
0	3.5	35.0	3.9	39.0	47.7	477.0	33.8	338.0
21	0.8	7.5	1.7	16.0	--	--	--	--
151	1.3	11.9	1.3	11.9	--	--	--	--
242	0.6	5.6	1.1	10.2	--	--	--	--
364	0.4	3.3	0.7	5.8	--	--	--	--
536	0.6	5.1	1.4	11.8	--	--	--	--
732	1.1	7.4	1.7	11.5	36.6	247.	54.7	370.

DAYS INCUBATED	NITROGEN					
	TOTAL LITTER		NON-EXTRACTABLE		ACID INSOLUBLE	
	REL	ABS	REL	ABS	REL	ABS
0	1.67 (0.13)	16.7	0.52	5.2	0.50	5.0
21	1.66 (0.09)	15.7	--	--	--	--
151	1.59 (0.10)	14.6	--	--	--	--
242	1.63 (0.06)	15.2	--	--	--	--
364	1.55 (0.13)	12.8	1.37	11.3	--	--
536	1.56 (0.11)	13.2	--	--	--	--
732	1.70 (0.05)	11.5	1.43	9.7	0.70	4.7

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